Panel PC

User's Manual

NO. G03-PCLZ0FRFP-F

Manual Revision: 3.0

Release Date: 2023/3/3

TABLE OF CONTENT

CAUTION Safety Precautions

- Operate the product according to the correct installation steps and with great care to make sure safety and comfort using experience. Please refer to the following safety instruction guide to avoid danger of electric shock or fire. Abide by the previous safety instruction guide to use and maintain the product and the hard disk to make sure of safe operating environment.
- Please follow the instruction manual for operation guide.
- The appropriate operating temperature ranges from 0 °C–50 °C.
- The operation humidity for this product is 5% to 80% RH.
- To avoid high temperature, please DO NOT overload the maximum power of the external power supply while the system is consuming high voltage. Be aware of the maximum temperature allowance of the power supply.
- See to it that the product is not working near the water.
- Always unplug power cable and other hardware cables from the system before cleaning.
- Apply only dry cloth for cleansing the product.
- Make sure that there is no heat source nearby when the product is working.
- Make sure that the thermal louver of the product is not blocked.
- Make sure to remove the power plug from the product when there is a thunder storm.
- Please remove the power plug from the product when you are not going to use the product for a long time.
- Make sure to set up or use the product on a stable surface.
- Make sure not to drop the product or strike it by any means.
- Make sure not to move the product when the power is on.
- Make sure not to step on the power cables and other cables or rest anything in them..
- Be sure to ground yourself to prevent static charge when installing any internal components. Use a grounding wrist strap and place all electronic components in any static-shielded devices. Most electronic components are sensitive to static electrical charge.
- Disconnect the power cord from the Panel PC unit prior to any installation. Be sure both the system and all external devices are turned off. Sudden surge of power could ruin sensitive components. Make sure the Panel PC unit is properly grounded.
- Do not open the system's back cover. If opening the cover for maintenance is a must, only a trained technician is allowed to do so. Integrated circuits on computer boards are sensitive to static electricity. To avoid damaging chips from electrostatic discharge, observe the following precautions:

    - Before handling a board or integrated circuit, touch an unpainted portion of the system unit chassis for a few seconds. This will help to discharge any static electricity on human body.
    - When handling boards and components, wear a grounding wrist strap available from most electronic component stores.

- Please contact qualified technician for maintenance or repair.
- Use only accessories and parts that are made by the qualified manufacturer.

User's Notice

This manual contains all information required for the utilization of this product to meet the user's requirements. But it will change, correct at any time without notice. Manufacturer provides this manual "as is" without warranty of any kind, and will not be liable for any indirect, special, incidental or consequential damages (including damages for loss of profit, loss of business, loss of use of data, interruption of business and the like).

Package Contents

- ☑ Power Core
- ☑ 90W AC-DC Adapter
- ☑ Panel PC System

Environmental Protection Announcement

Do not dispose this electronic device into the trash while discarding. To minimize pollution and ensure environment protection of mother earth, please recycle.

Chapter 1
Introduction

1-1 General Descriptions

Thank you for purchasing the system, a new product developed, designed and manufactured under leading technical power and consistent dedication to fine workmanship.

Highlight Features for this Panel PC product series:

- TFT LCD with LED backlight
- 10-points Multi Capacitive Touch
- Support Open frameless design
- A true Flat, easy-to-clean front surface with edge-to-edge design
- Front IP65 for protection against water and dust
- Cable less design for easy hardware expansion
- 12-36V DC-in, with Electrical Over Stress (EOS) and OVP design
- Onboard Intel® Tiger Lake SoC Processor
- Support 2* DDR4 3200MHz Dual Channel SO-DIMM up to 64GB
- Support HDMI Display
- Support 1 * 7+15 Pin SATAIII (6Gb/s) device expansion
- 1* M.2 M-key (2242/2280), PCIe 4.0 x4interface, supports NVMe)
- 1* M.2 E-key (2230) USB2.0/PCIex1 interface supports CNVi
- 1* M.2 B-key (3042/3052/6570) supports 3G/4G/5G Module)
- 1* SIM card slot
- 2* RJ-45 LAN, 2* USB3.2 (Gen2), 4* USB2.0
- Support 2* RS232/422/485 & 2* RS232
- Support CPU Smart FAN
- Compliance with ErP standard
- Support Watchdog function

The system has the following features besides other basic functions:

- ***WiFi:*** the onboard M.2 E-key type-2230 PCI-E slot in the board supports compatible WiFi card that can act as a mini wireless modem when external antennas are connected. Different computers in the house can build wireless connections through the system and take necessary data from it, thus reducing the complexity in network establishment.
- ***Dual RJ-45 LAN:*** The system is integrated with dual RJ-45 LAN (1* Intel® I225V 2.5G, 1* Intel® I219LM GbE) network controller realizing efficient power management for the operating system.
- ***USB 3.2 (Gen.2)***: Experience Fastest data transfers at 10Gb/s with USB3.2 Gen.2 the latest connectivity standard. Built connect easily with next-generation components and peripherals, USB USB3.2 Gen.2 transfers data much faster

compatible with previous USB generations.

- ***CPU Usage:*** The CPU Usage diagram shows a beautiful data curve that indicates a pretty low CPU usage percentage for video playback of different formats. GPU performances are excellent as well.
- ***dB Value:*** The design of the system takes into consideration the needed quiet operating environment in the living room and the average dB value is below 26 under normal operation to ensure the tranquility.

1-2 Specifications

Panel PC Model Common Specifications:

Main System Parameters	
Embedded CPU	Intel® Tiger Lake series processor ***Note:** CPU model may vary from different options. Please please visit our website or consult your dealer for more information of onboard CPU.*
RAM	Support 2* DDR4 SO-DIMM (Max 64GB)
Flash ROM	256MB SPI Flash ROM
Watchdog Timer	256 levels, 0~255 sec.
OS Support	Windows 10,11/Linux
Storage	
SATA Port	Support 1* 2.5” SATA HDD (UPS Cell Option)
M.2 M Slot	1* M.2 M key (2242/2280, SATA/PCI-Ex4)
Expansion 好	
M.2 Expansion Slot	1* M.2 E key (2230) for WIFI 1* M.2 B key (3042/3052/6570) for 4G/5G Module (4pcs Built in Antenna)
I/O Connector	
I/O Ports & Switches	2* USB 3.2 (Gen.2) 4* USB 2.0 2* RS232/422/485 2* RS232 or 2* GPIO*(Optional)* 1* HDMI 1* AT/ATX mode button 2* RJ-45 LAN (1* Intel® I225V 2.5G, 1* Intel® I219LM GbE) 1* 12~36V DC-in locking power jack 1* Power button 1* 2-pin front power button
CASE	
Panel Material	Aluminum
Case Material	Iron
Color	White
Coating Requirement	Spray Paint

Certification Compliance	
Certifications	CE, FCC, IP65(Front)
Safety	
Shock	1ms duration
Vibration	5~500Hz/1Grms
Environment	
Temperature	Operating: -10°C ~ 50°C
	Storage: -20°C ~ 70°C
Warranty	
Warranty	2 Years Limited Warranty（Panel and Touch is only Warranty 1 Year）

Panel PC Model Differences:

HPC150C-DCP Series	
Display	
Front Bezel	IP65, NEMA 4 rugged protection, metal front bezel
Display Type	15.0" with LED Backlight
Brightness (cd/m²)	350 nits
Display Color	16.7m
Resolution	1024 x 768 @60Hz
Viewing Angle	178°/178° (H/V)
Pixel Pitch	0.099 x 0.297mm
Aspect Ratio	4:3
Contrast Ratio	1000:1
Response Time	35 ms
Touch Screen	
Type	Projected capacitive type
Active Range	336.3 x 260.6mm ±0.3mm
Transparency	≧85%
Surface Hardness	≧6H (JIS-5400)
Power	
Power Input	12~36V DC-in AC version: 100~240V AC - DC 60W power adapter or DC version: 12VDC with over current protection fuse
Power Consumption	45W
Dimensions	
Case Dimensions	382.3 x 288.6 x 63.1mm

HPC156C-DCP Series	
Display	
Front Bezel	IP65, NEMA 4 rugged protection, metal front bezel
Display Type	15.6" with LED Backlight
Brightness (cd/m²)	250 nits
Display Color	256K
Resolution	1920 x 1080 @60Hz
Viewing Angle	170°/170° (H/V)
Pixel Pitch	0.17925 x 0.17925mm
Aspect Ratio	16:9
Contrast Ratio	800:1
Response Time	35ms
Touch Screen	
Type	Projected capacitive type
Active Range	386.81 x 237.12mm ±0.3mm
Transparency	≧85%
Surface Hardness	≧6H (JIS-5400)
Power	
Power Input	12~36V DC-in AC version: 100~240V AC - DC 60W power adapter or DC version: 12VDC with over current protection fuse
Power Consumption	42W
Dimensions	
Case Dimensions	406.81 * 259.12 * 56.00mm

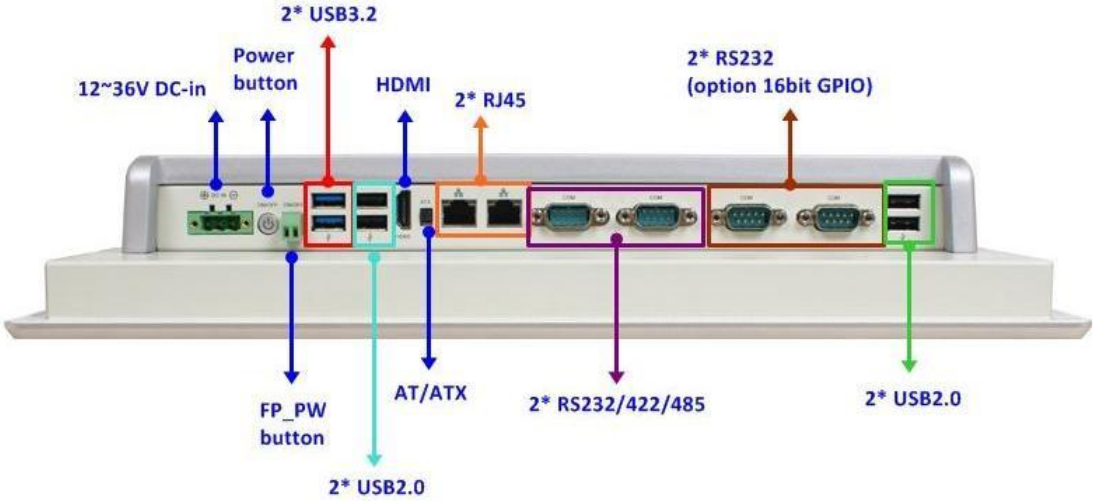
HPC170C-DCP Series	
Display	
Front Bezel	IP65, NEMA 4 rugged protection, metal front bezel
Display Type	17.0" with LED Backlight
Brightness (cd/m²)	350 nits
Display Color	16.7m
Resolution	1280 x1024 @60Hz
Viewing Angle	170°/160° (H/V)
Pixel Pitch	0.264 x 0.264mm
Aspect Ratio	4:3
Contrast Ratio	1000:1
Response Time	35 ms
Touch Screen	
Type	Projected capacitive type
Active Range	372.92 x 305.34mm ±0.3mm
Transparency	≧85%
Surface Hardness	≧6H (JIS-5400)
Power	
Power Input	12~36V DC-in AC version: 100~240V AC - DC 90W power adapter or DC version: 12VDC with over current protection fuse
Power Consumption	47.5W
Dimensions	
Case Dimensions	400.9 x 333.3 x 65.0mm

HPC215C-DCP Series	
Display	
Front Bezel	IP65, NEMA 4 rugged protection, metal front bezel
Display Type	21.5" with LED Backlight
Brightness (cd/m²)	250 nits
Display Color	16.7M display color
Resolution	1920 x 1080 @60Hz
Viewing Angle	170°/160° (H/V)
Pixel Pitch	0.24825 x 0.24825mm
Aspect Ratio	16:9
Contrast Ratio	1000:1
Response Time	8ms
Touch Screen	
Type	Projected capacitive type
Active Range	386.81 x 237.12mm ±0.3mm
Transparency	≧85%
Surface Hardness	≧6H (JIS-5400)
Power	
Power Input	12~36V DC-in AC version: 100~240V AC - DC 60W power adapter or DC version: 12VDC with over current protection fuse
Power Consumption	45W
Dimensions	
Case Dimensions	535.80 * 327.31 * 68.50 mm

HPC270C-DCP Series	
Display	
Front Bezel	Rugged protection, metal front bezel
Display Type	27.0" with LED Backlight
Brightness (cd/m²)	300 nits
Display Color	16.7M display color
Resolution	1920 x 1080 @60Hz
Viewing Angle	178°/178° (H/V)
Pixel Pitch	0.1038 x 0.1038mm
Aspect Ratio	16:9
Contrast Ratio	1000:1
Response Time	13ms
Touch Screen	
Type	Projected capacitive type (LG in-cell Touch)
Active Range	597.888 x 336.312mm ±0.2mm
Surface Hardness	≧3H (JIS-5400)
High-end Features	Support High Touch Performance Support Strengthened Polarizer for in-TOUCH Support High Picture Quality Support Low Reflection / Deep Black Support No deterioration of PQ caused by TOUCH Film Support Low color Shift Support Stable Touch without Flash
Power	
Power Input	12~36V DC-in AC version: 100~240V AC - DC 60W power adapter or DC version: 12VDC with over current protection fuse
Power Consumption	48W
Dimensions	
Case Dimensions	611.20 x 359.18 x 59.00mm

1-3 I/O Outlets

Bottom Side:



Note: The diagrams in this manual only serve for illustration. If there are any differences that we do not cover, please refer to the actual product you purchase.

1-4 Connector Description

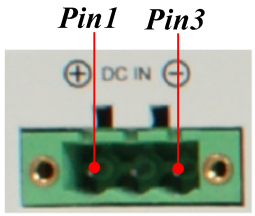
(1) Connector Functions

Icon	*Name*	*Function*
	**12~36V DC-in Power Jack**	For user to connect compatible power adapter to provide power supply for the system.
	**Power Button**	For user to turn on/off the system.
	**Power Button Jack**	For user to turn on/off the system.
	**AT/ATX Mode Switch**	AT/ATX mode Supported at front side I/O switch. – AT: Directly PWR on as Power input ready – ATX: Press Button to PWR on after Power input ready ***Note**: User can switch up for ATX Mode or switch down for AT Mode.*
	**USB 3.2 Ports**	To connect USB keyboard, mouse or other devices compatible with USB3.2 specification. USB 3.2 Gen.2 port supports up to 10Gbps data transfer rate.
	**USB 2.0 Ports**	To connect USB keyboard, mouse or other devices compatible with USB specification.
	**HDMI Port**	To connect display device that support HDMI specification.

	**RJ-45 LAN Port**	This connector is standard RJ-45 LAN jack for Network connection.
	**Serial Port**	Mainly for user to connect external MODEM or other devices that supports Serial Communications Interface.
 (*Optional)	**GPIO Port-Male**	**Male** General Purpose Input Output port.

(2) I/O Connector Description

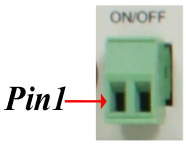
DCIN1 (3-pin): 12~36V DC-in Power Connector



Pin No.	Definition
1	+12~36V VCC
2	GND
3	GND

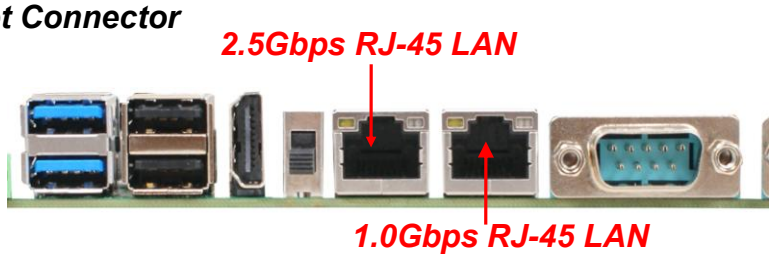
Warning: *Find Pin-1 position before connecting power cable to this 3-pin power connector.* ***WRONG INSTALLATION DIRECTION WILL DAMAGE THE BOARD!!***

FPW_SW (2-pin block): Power button jack



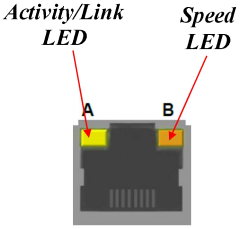
Pin No.	Definition
1	FP_SPSW
2	GND

RJ-45 Ethernet Connector



*** There are two LED next to the LAN port. Please refer to the table below for the LAN port LED indications.*

For 1.0Gbps RJ-45 LAN port:



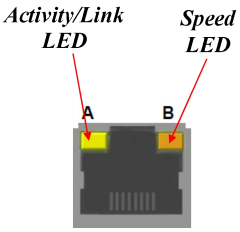
A: Activity/Link LED

Status	Description
Off	No Link
Blinking	Data Activity
On	Link

B:Speed LED

Status	Description
Off	10Mbps connection
Orange	100Mbps connection
Green	1Gbps connection

For 2.5Gbps RJ-45 LAN port:



A: Activity/Link LED

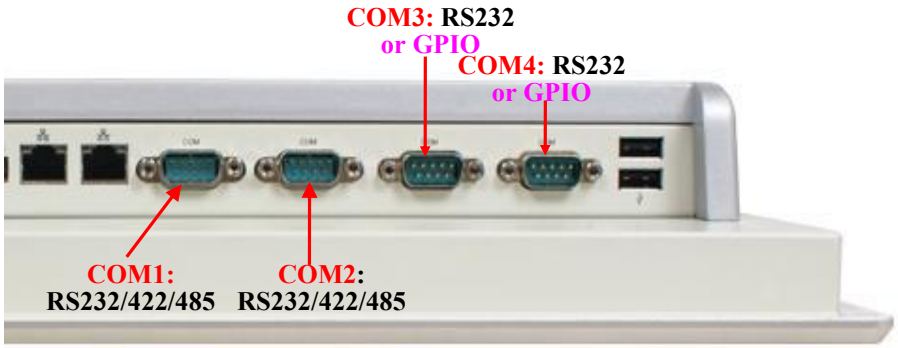
Status	Description
Off	No Link
Blinking	Data Activity
On	Link

B:Speed LED

Status	Description
Off	10/100Mbps connection
Red	1Gbps connection
Green	2.5Gbps connection

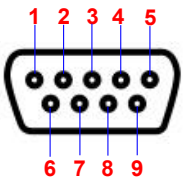
**** Note:* 2.5Gbps** *high-speed transmission rate is* ***only*** *supported over* ***CAT 5e UTP*** *cable.*

COM Port & GPIO Connector



COM1/COM2:*RS232/422/485 Serial Port;***COM3/COM4: RS232 Serial Port.**

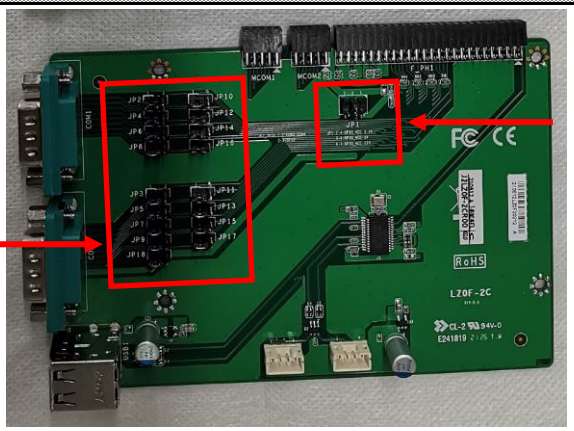
The pin assignment for RS-232/ 422/ 485 is listed as follows:

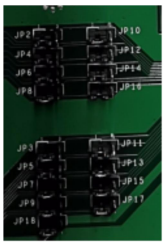


Pin NO.	RS232	*RS422 (optional)	*RS485 (optional)
1	DCD	TX-	DATA-
2	RXD	TX+	DATA+
3	TXD	RX+	NC
4	DTR	RX-	NC
5	GND	GND	GND
6	DSR	NC	NC
7	RTS	NC	NC
8	CTS	NC	NC
9	RI	NC	NC

COM1 & COM2 ports can function as RS232/422/485 port. In normal settings COM1/COM2 functions as RS232 port. With compatible COM cable they can function as RS422 or RS 485 port. User also needs to go to BIOS to set ***'Transmission Mode Select'*** for ***'Serial Port 1 Configuration' or 'Serial Port 2 Configuration'*** (refer to Page 28) at first, before using specialized cable to connect different pins of this port.

***Note**: COM3 and COM4 from Panel PC can function as RS232 port or GPIO port **by order. User need to dissemble the whole heat sink back shell (refer to 2-4-3, step-1)** to make further settings on the daughter board for specific function.*

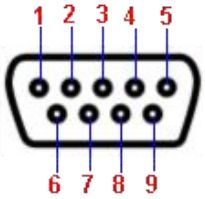




JP2~JP18

Setup	Function
(1-2) closed	RS232 COM
(2-3) closed	GPIO Port

User can set COM3/4 as GPIO port by setting up JP2~JP18 Pin(2-3) closed.
The pin assignment for GPIO connector is listed as follows:



FOR COM3 Port:

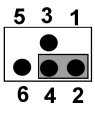
Pin NO.	RS232
1	GPIO70
2	GPIO71
3	GPIO72
4	GPIO73
5	GND
6	GPIO74
7	GPIO75
8	GPIO76
9	GPIO77

FOR COM4 Port:

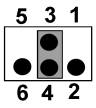
Pin NO.	RS232
1	GPIO80
2	GPIO81
3	GPIO82
4	GPIO83
5	GPIO VCC
6	GPIO84
7	GPIO85
8	GPIO86
9	GPIO87

For GPIO VCC please refer to jumper JP1 from the daughter board for further settings:

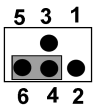
JP1→ GPIO VCC Select



2-4 Closed: GPIO_VCC=3.3V;



3-4 Closed: GPIO_VCC=5V;

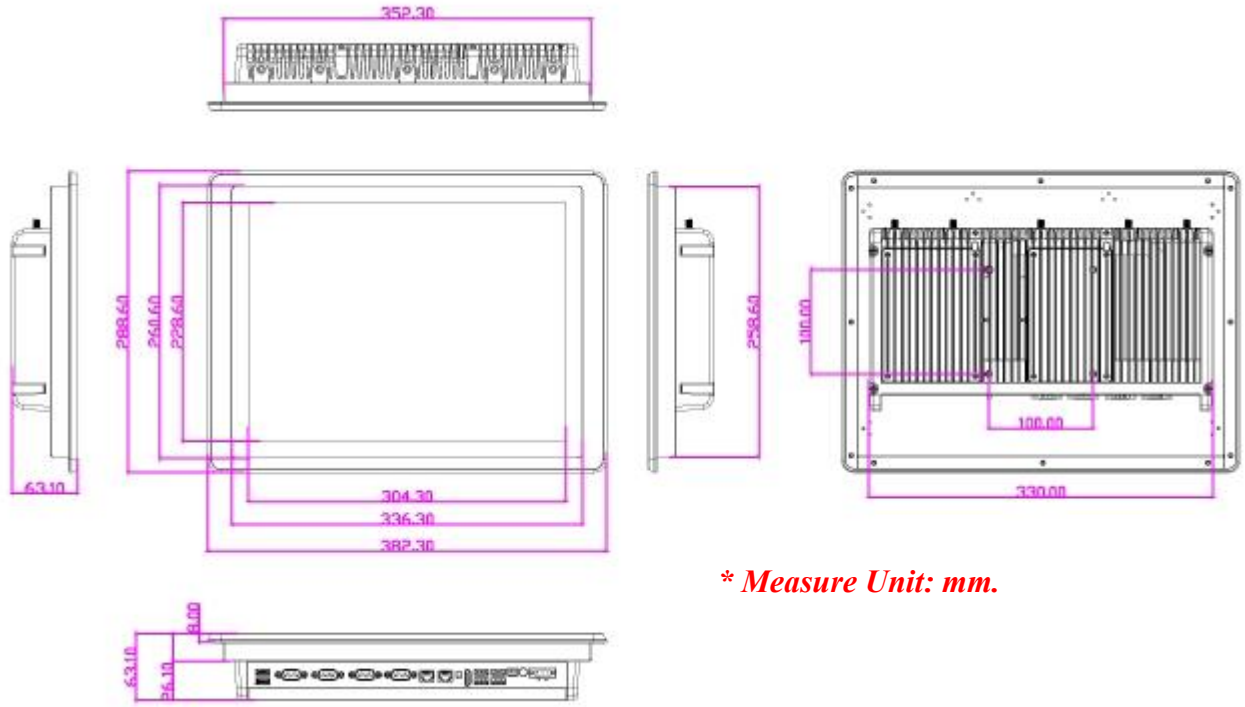


4-6 Closed: GPIO_VCC=12V

Chapter 2
Hardware and Installation

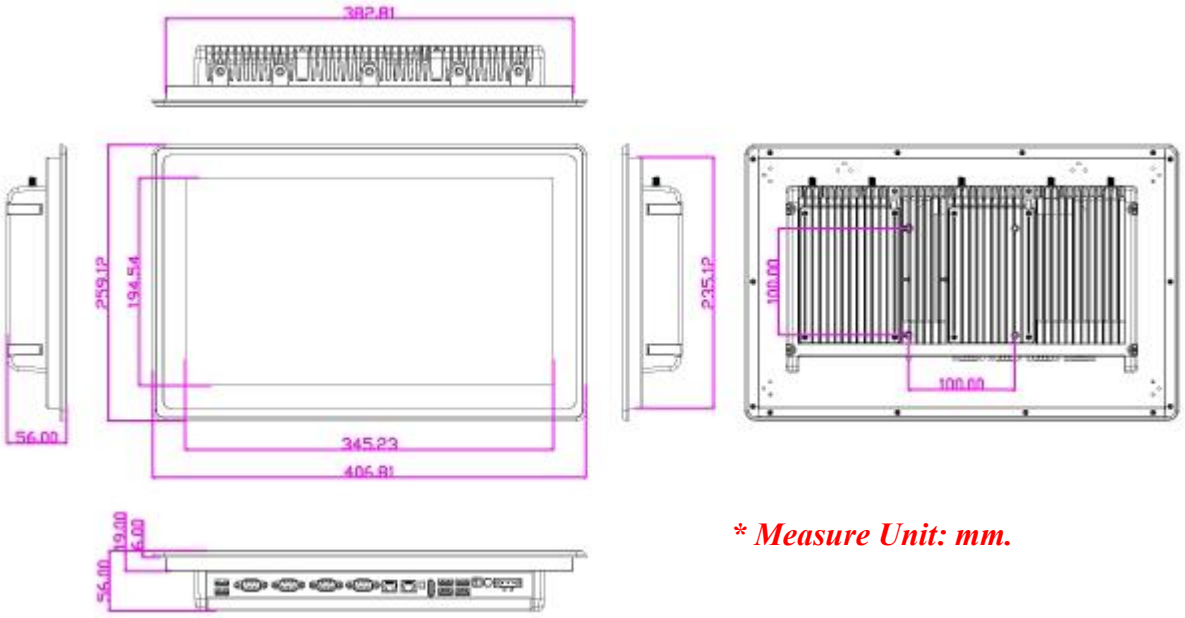
2-1 Dimension and Outlines

For HPC150C-DCP Series



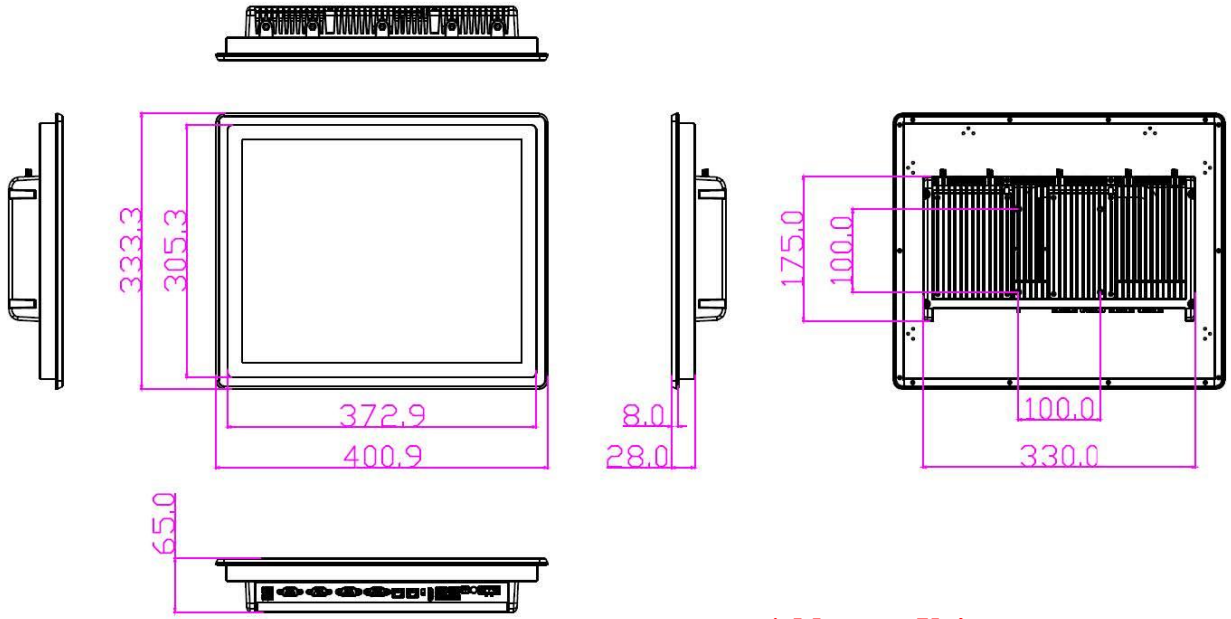
** Measure Unit: mm.*

For HPC156C-DCP Series



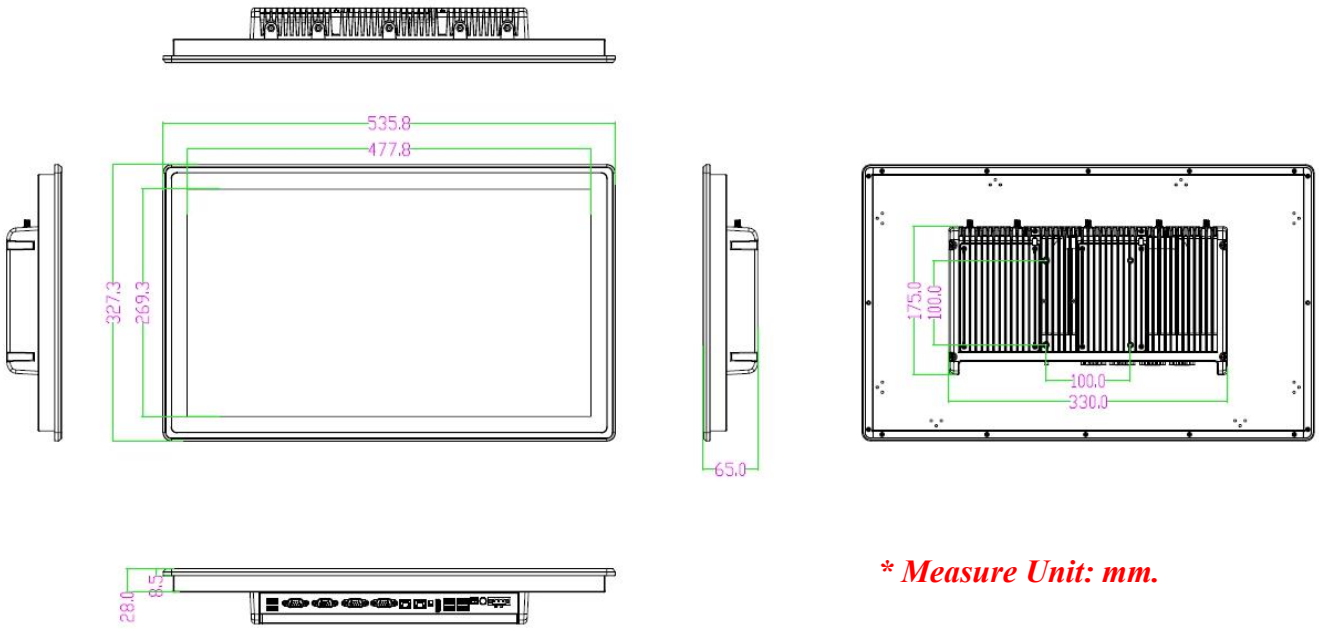
** Measure Unit: mm.*

For HPC170C-DCP Series



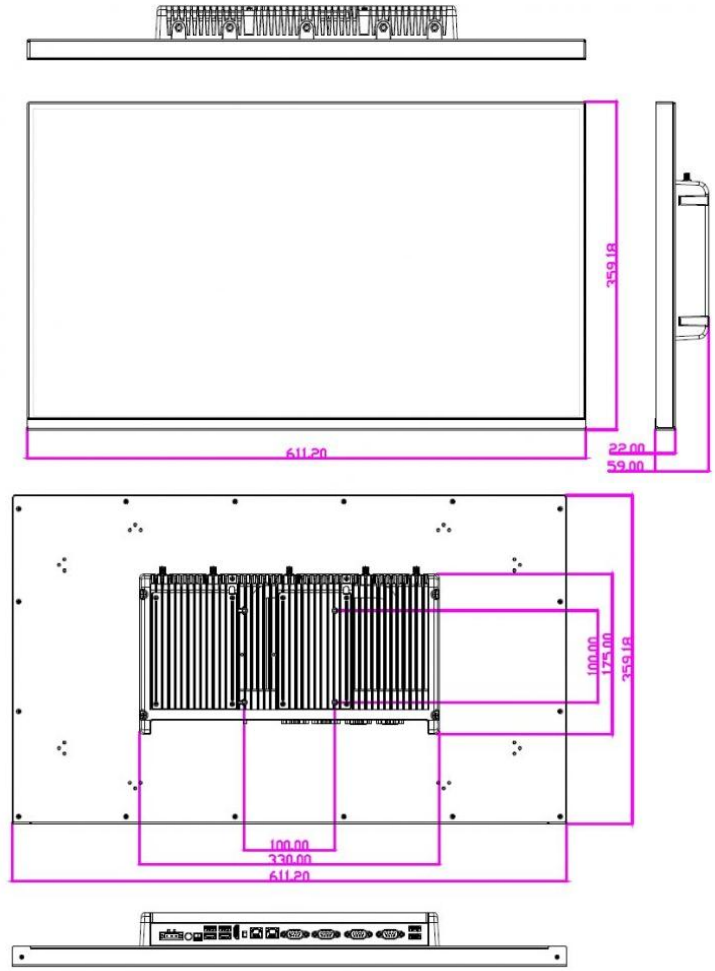
** Measure Unit: mm.*

For HPC215C-DCP Series



** Measure Unit: mm.*

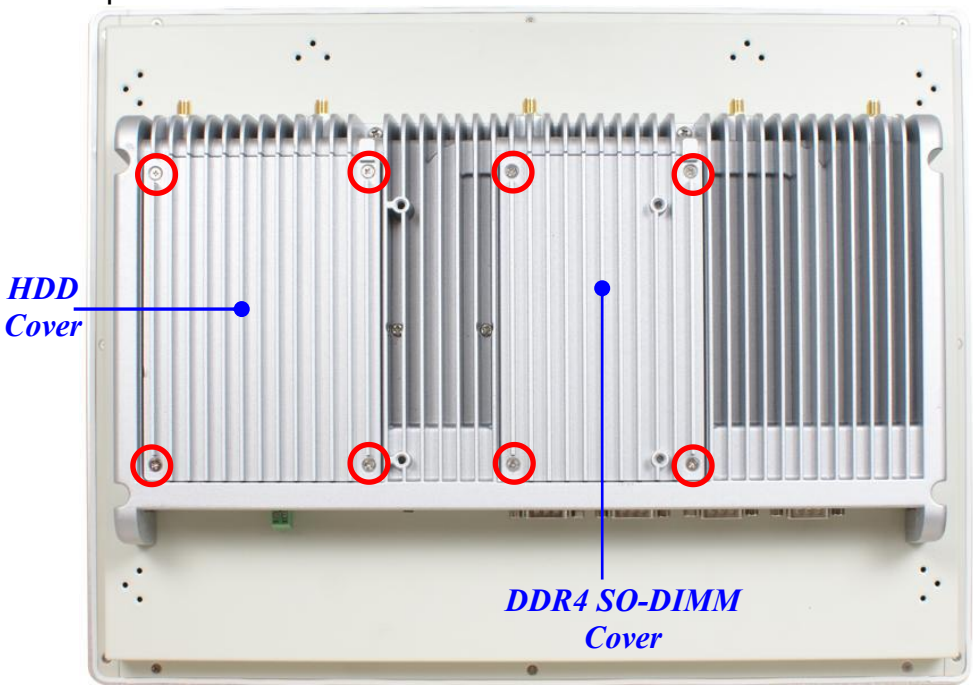
For HPC270C-DCP Series



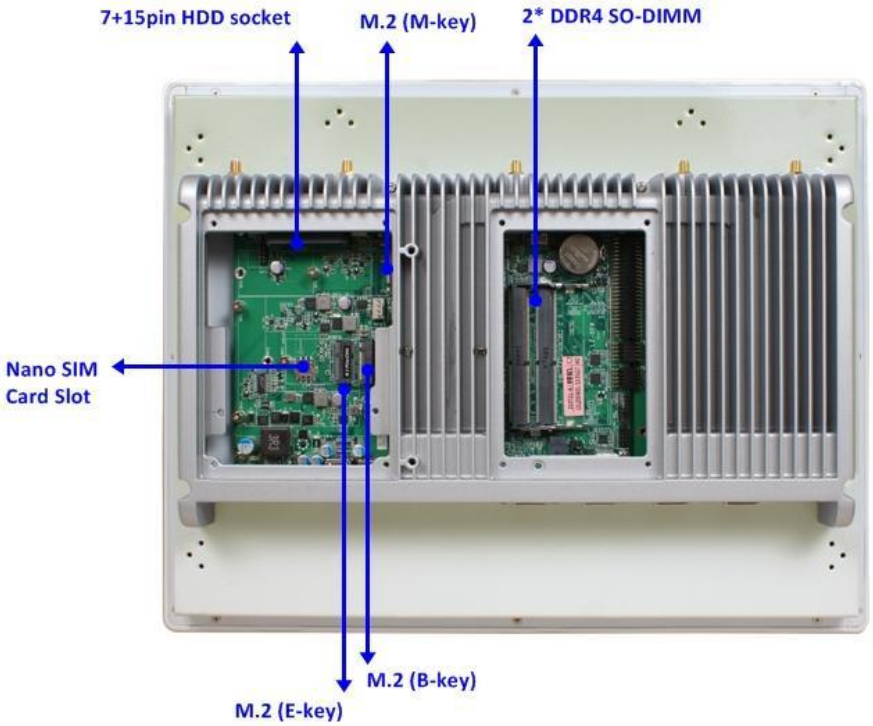
**** Measure Unit: mm.***

2-2 To Open the Chassis

HPC150C-DCP/ HPC156C-DCP/HPC170C-DCP/ HPC215C-DCP/HPC270C-DCP series come with two expansion covers on the backside of the chassis to simplify expansion procedures:



1. Put the system upon a stable platform with this side up. Tighten up the screws in the marked spots to remove HDD and SO-DIMM covers.

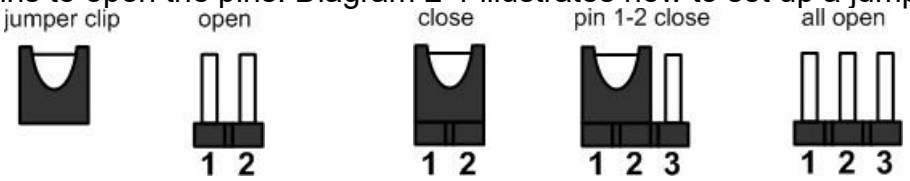


2. User can install expansion parts according to their own needs: DDR4 SO-DIMMs, M.2 M-key type-2242/2280 card, M.2 E-key type-2230 card, M.2 B-key type-3042/3052/6570 card along with compatible Nano-SIM card, and compatible 2.5'' hard disk.

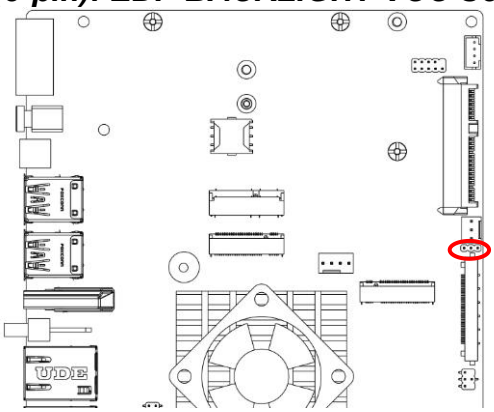
Note: The diagrams in this manual only serve for illustration. If there are any differences that we do not cover, please refer to the actual product you purchase.

2-3 Jumper Settings

Jumper is a small component consisting of jumper clip and jumper pins. Install jumper clip on 2 jumper pins to close the pins. And remove jumper clip from 2 jumper pins to open the pins. Diagram 2-1 illustrates how to set up a jumper.



JP1 (3-pin): EDP BACKLIGHT VCC Select (2.0 pitch)

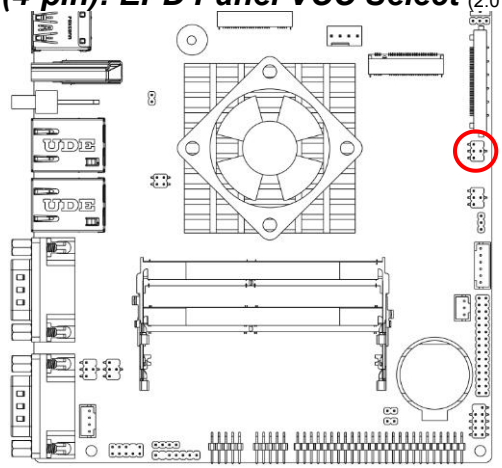


JP1→EDP BACKLIGHT VCC Select

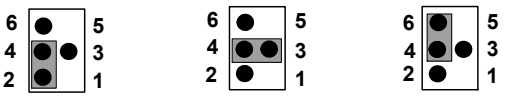
1-2 Closed:
VCC= +5V

2-3 Closed:
VCC= +12V

JP2 (4-pin): EPD Panel VCC Select (2.0 pitch)



JP2 → EDP Panel VCC Select

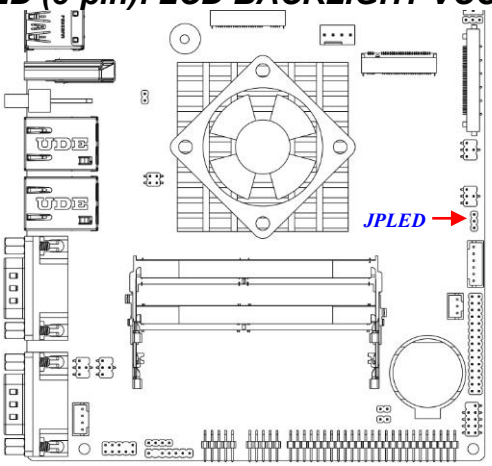


2-4 Closed:
VCC=+3.3V;

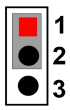
3-4 Closed:
VCC=+5V;

4-6 Closed:
VCC=+12V

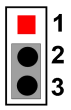
JPLED (3-pin): LCD BACKLIGHT VCC Select (2.0 pitch)



JPLED →LCD BACKLIGHT VCC Select

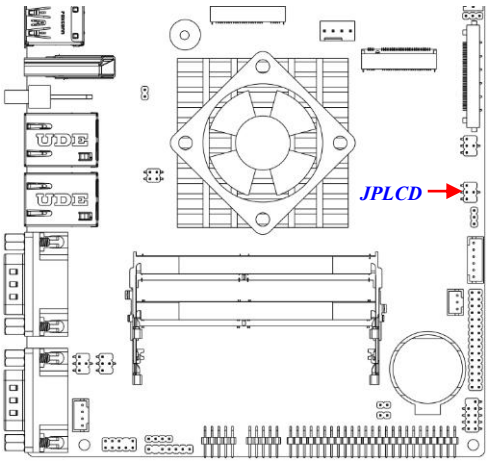


1-2 Closed:
VCC= +5V

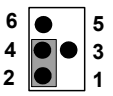


2-3 Closed:
VCC= +12V

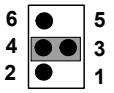
JPLCD (4-pin): LCD Panel VCC Select (2.0 pitch)



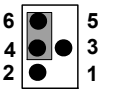
JPLCD → LCD Panel VCC Select



2-4 Closed:
VCC=+3.3V;

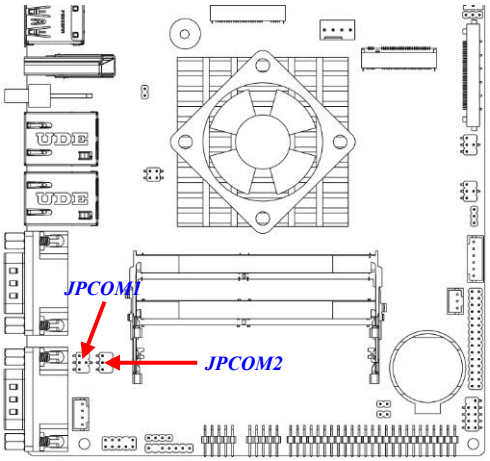


3-4 Closed:
VCC=+5V;

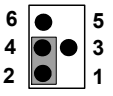


4-6 Closed:
VCC=+12V

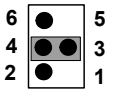
JPCOM1/2 (4-pin): COM1/COM2 Port Pin9 Function Select (2.0 pitch)



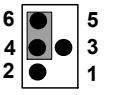
JPCOM1 → COM1 Port Pin-9
JPCOM2 → COM2 Port Pin-9



2-4 Closed:
PIN9=RS232;

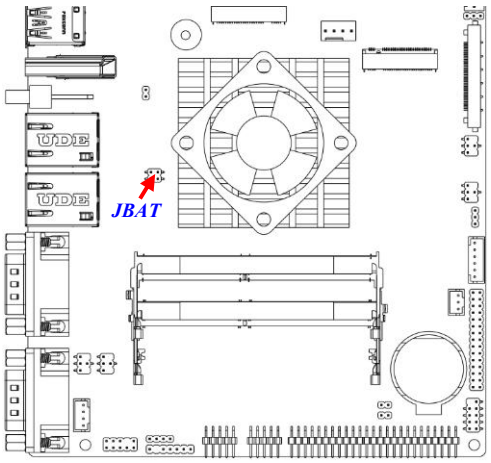


3-4 Closed:
PIN9=+5V;

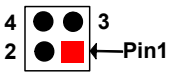


4-6 Closed:
PIN9=+12V

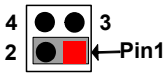
Pin (1-2) of JBAT (4-pin): Clear ME_RTC (2.0 pitch)



PIN(1-2) Clear ME_RTC

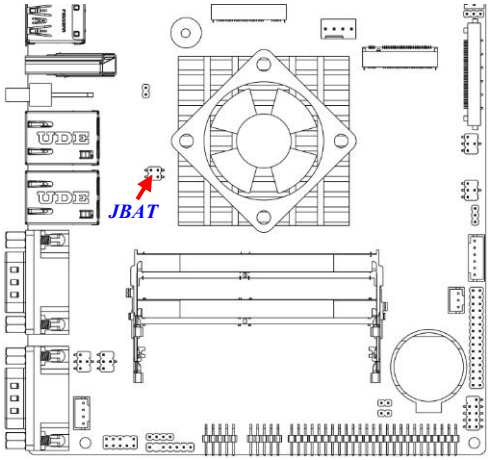


1-2 Open: Normal(Default)

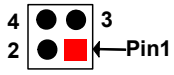


1-2 Closed: Clear ME_RTC

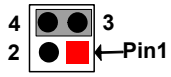
Pin (3-4) of JBAT (4-pin): Clear CMOS Setting (2.0 pitch)



PIN(3-4) Clear CMOS

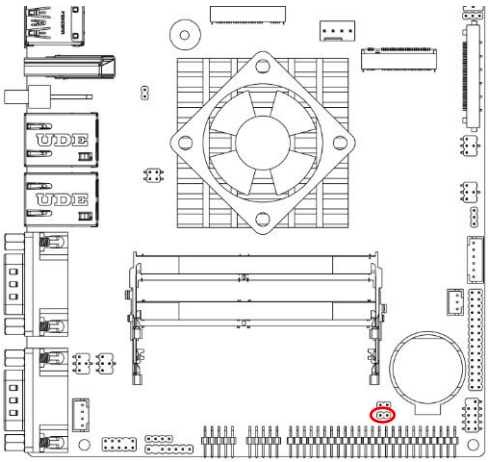


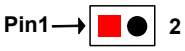
3-4 Open: Normal(Default)



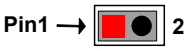
3-4 Closed: Clear CMOS

J80PORT (2-pin): GPIO Select (2.0 pitch)





1-2 Open: 80 port



1-2 Closed: GPIO

2-4 Hardware Installation
2-4-1 To Install SO-DIMM to the Board

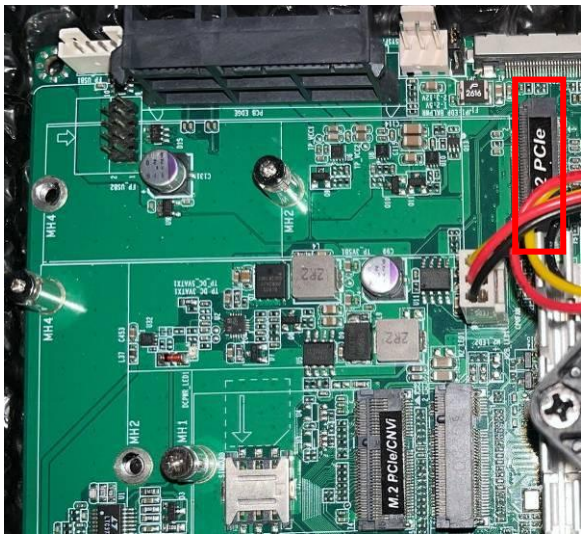
1. Locate the DDR4 SO-DIMM slots on the board.

2. Insert the gold-figure side of a compatible SO-DIMM into the slot at a 30 degree. See to it that the break of the module fit into the notch of the slot and the golden-finger side should be fully plugged into the slot.

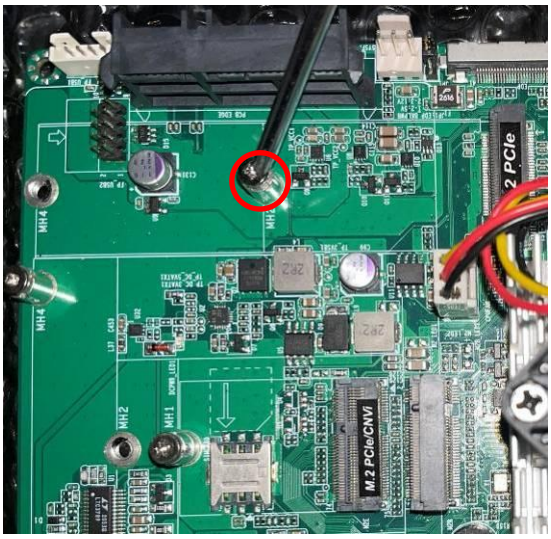
3. Press down to secure the SO-DIMM to the slot. The eject tabs will lock automatically if installing direction is correct.

2-4-2 To Install M.2 M-key Card

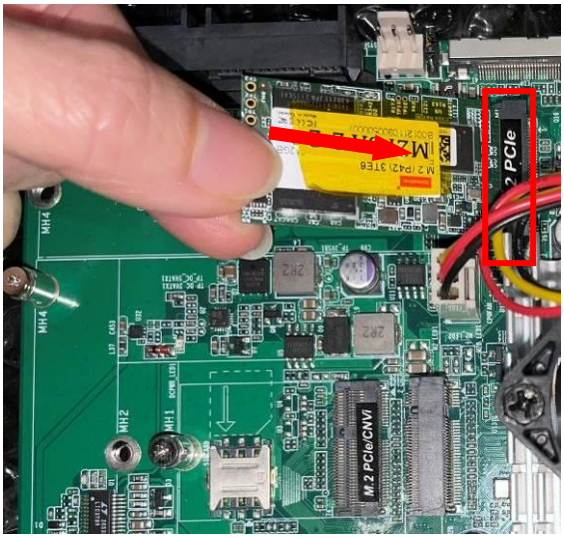
M2M slot: M.2 M-Key (2242/2280), PCIe 4.0 x4 interface supports NVMe.



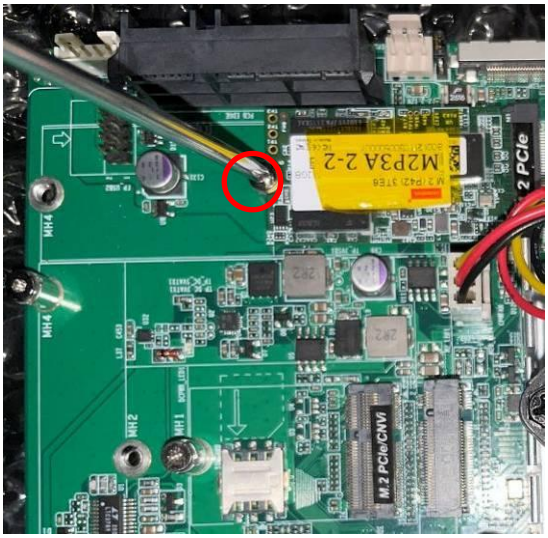
1. Locate M.2 M-key slot on the board.



2. Remove the screw in the marked spot (MH2; default) for further installation.



3. Insert the gold-figure side of compatible M.2 M-key type-2242 card into the slot.



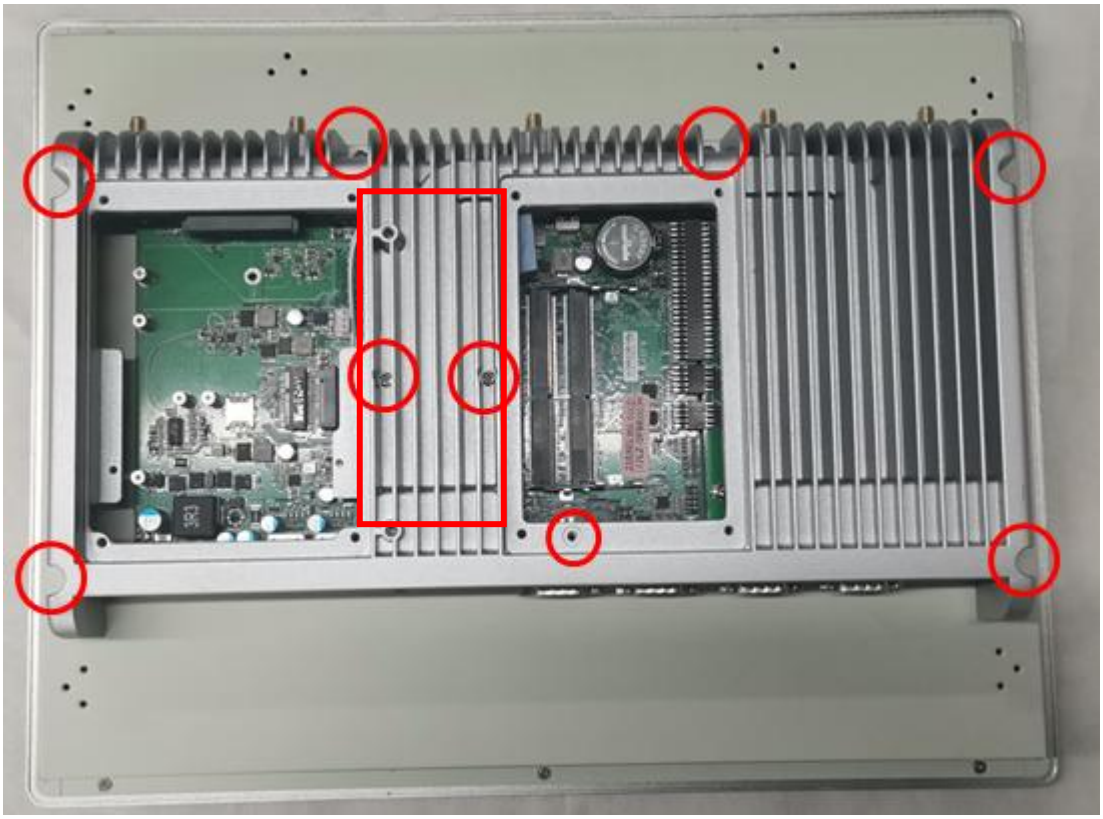
4. Lock the card to the board by tightening up the screw to the marked spot.

Note:* the screw post and nut fixed at location **MH2 by default for 4.2cm type-2242 card installation. If you wish to install type-2280 card, please remove corresponding screw post under the screw as well and lock the screw post into location **MH4** before installing 8 cm type-2280 card to the slot. The other steps are the same.*

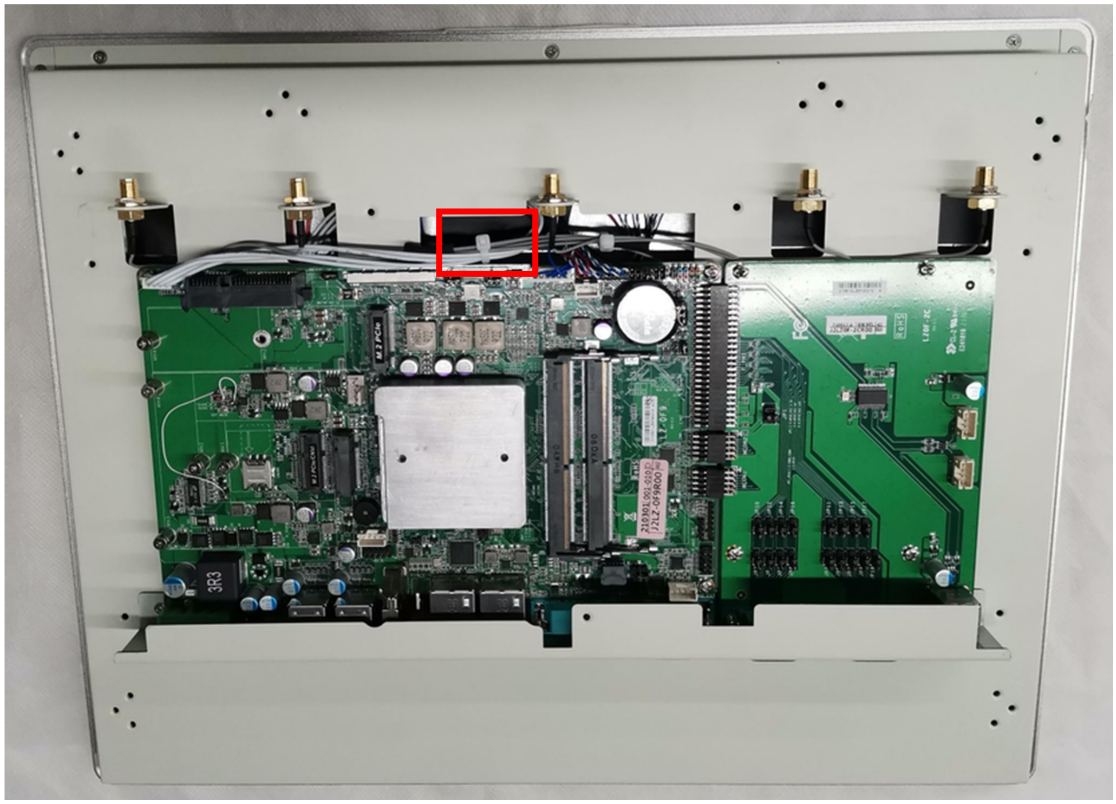
2-4-3 To Install M.2 E-key Wi-Fi Card

M2E slot: M.2 E-Key (2230), USB2.0/PCIex1 interface supports CNVi.

Note:User needs to pick out the WIFI antenna string and press the metal hat on the string end to corresponding metal button on the installed WiFi card, so they need to remove the whole chassis heat sink shell on the back of the Panel PC for further installation, which is different from **2-2, please refer to the following steps for the installation of the compatibale M.2 E-Key Wi-Fi card:*

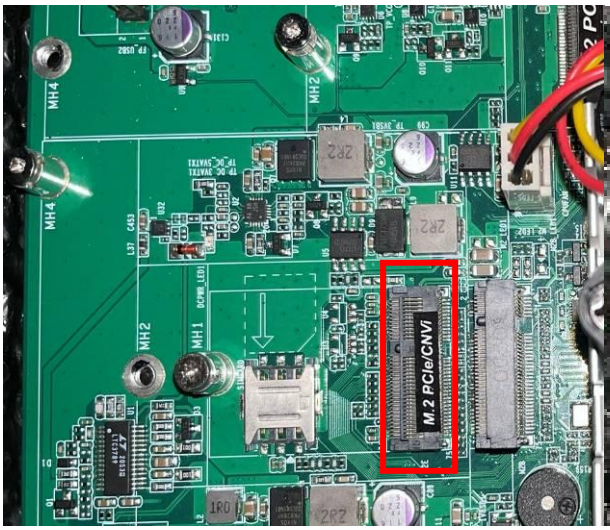


1. Remove the screws in the marked red circle spots and dissemble the whole chassis heat sink shell from the Panel PC.

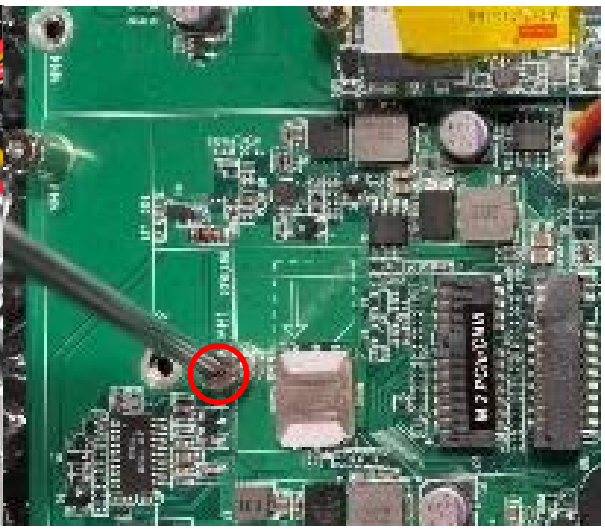


2. The WiFi antenna strings (for better signal reception) are tied up in a bundle with other cables; Pick out the antenna strings from the bundle and tear off the **acetate tape** which protects the metal hats of the string end.

Notice: *The other wires/cables must be wrapped with* ***Insulated Tape*** *and placed in the original position to avoid short circuit caused by contact between the metal parts and the mainboard.*



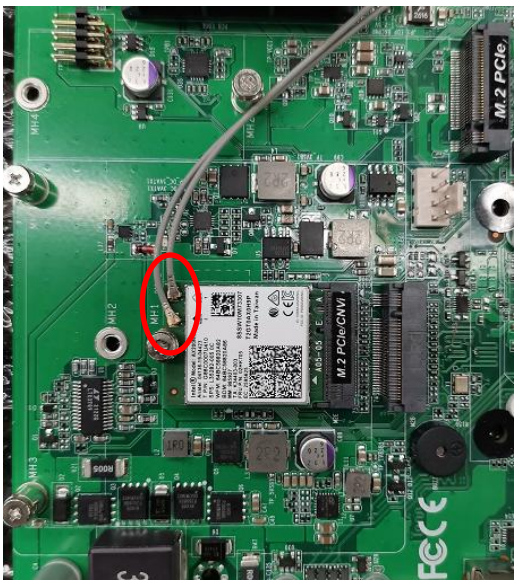
3. Locate M.2 E-key slot on the board.



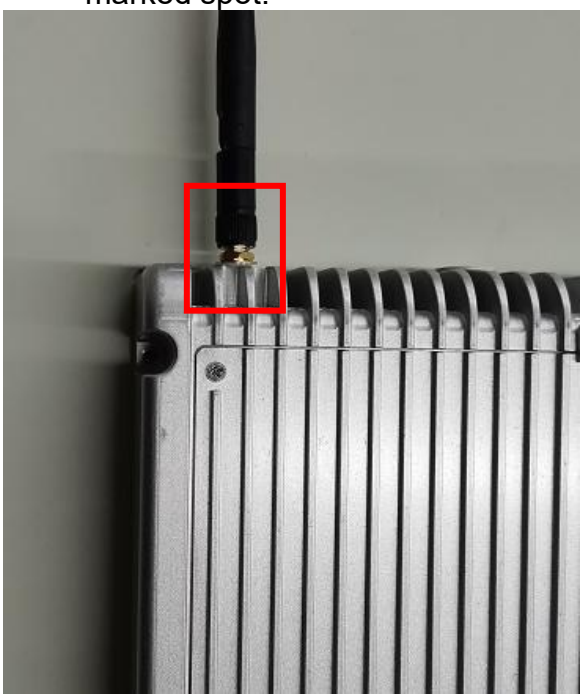
4. Remove the screw post & screw nut in the marked spot **(MH1)**.

5. Insert the gold-figure side of the compatible M.2 E-key type-2230 Wi-Fi card into the slot.

6. Secure the card to the board by tightening up the screw post to the marked spot.



7. Tear off the **acetate tape** to find metal hats of Wi-Fi antenna strings.Press the metal hats of the antenna string end to the antenna slots on the card as showed.



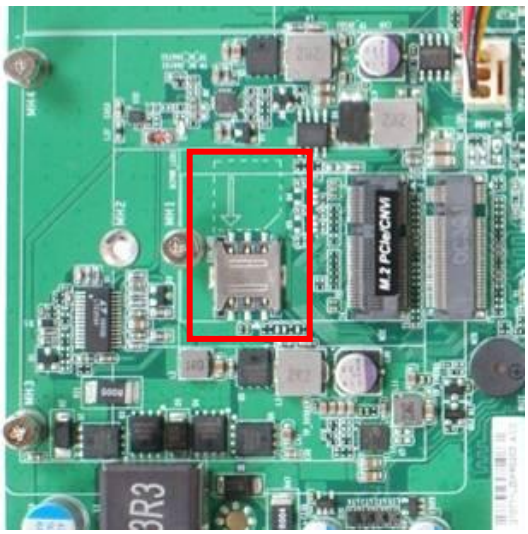
8. Locate the Wi-Fi antenna holes of the IO panel. Connect the external Wi-Fi receiver antenna to the antenna head on the panel.

Note**: We suggest that the connection of the external Wi-Fi receiver antenna be made **after all hardware installation finished and the chassis is assembled back to the panel.

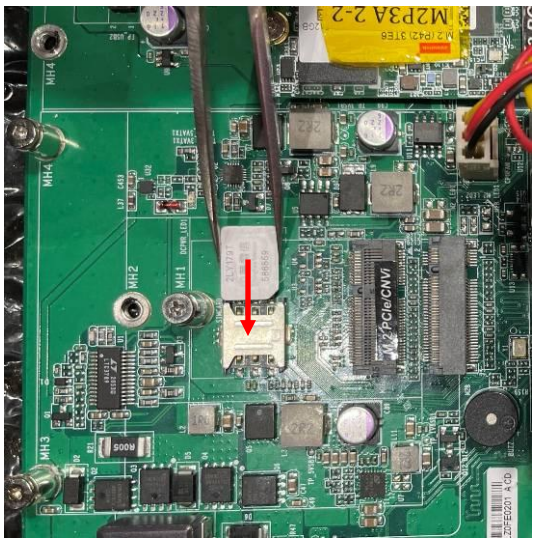
2-4-4 To Install M.2 B-key Card along with Nano-SIM card

M2B slot: M.2 B-Key (3042/3052/6570) supports 3G/4G/5G module, co-function with SIM card installed.

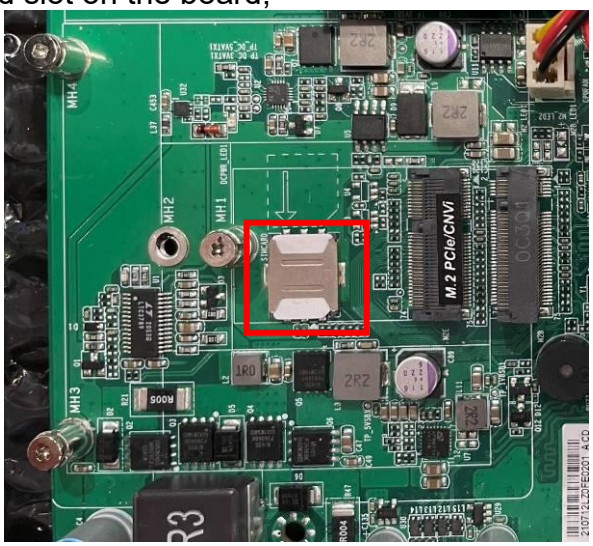
1) to install compatible SIM card into SIM card slot:



1. Locate SIM card slot on the board;



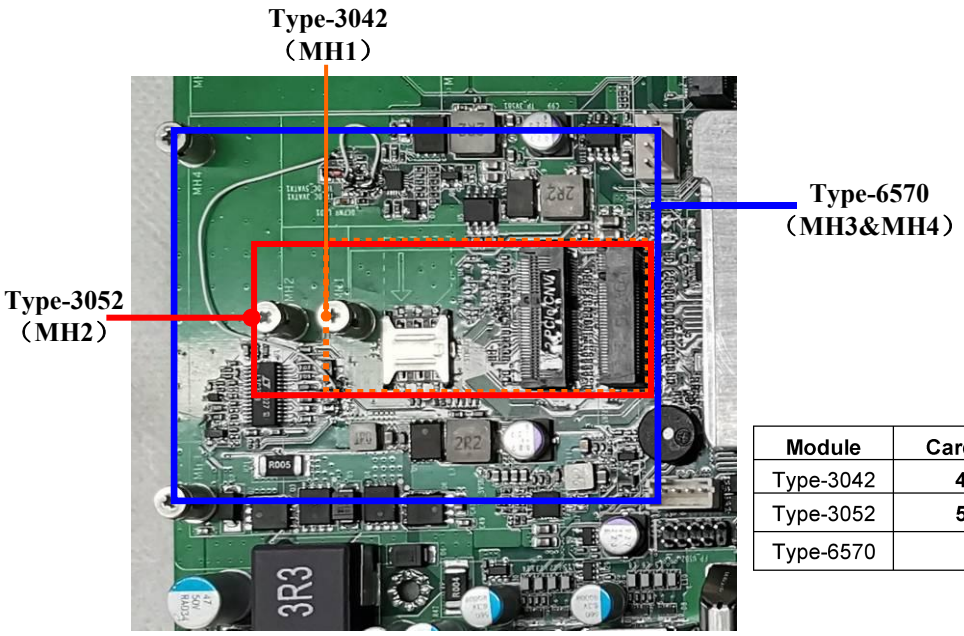
2. Use a pair of tweezers to pick up compatible SIM card and push it into the slot in the direction as shown.



3. The board with compatible SIM card installed in place.

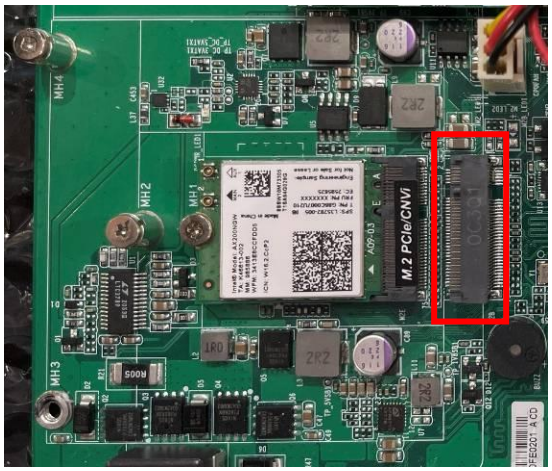
2) to install compatible M2B card:

M2B slot supports 3 different types of M2B cards in different lengths:

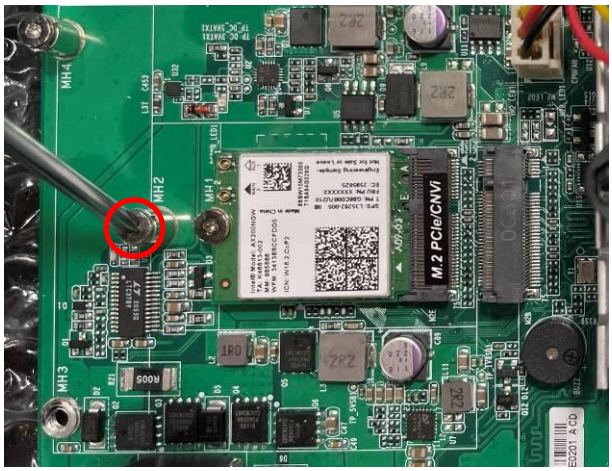


Module	Card Length	Nut Location
Type-3042	**4.2 cm**	MH1
Type-3052	**5.2 cm**	MH2
Type-6570	**7cm**	MH3 & MH4

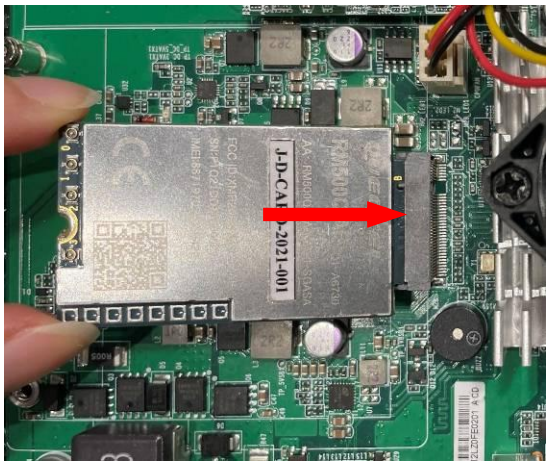
The installation steps are basically the same. Take the installation process of type-3052 card as an example:



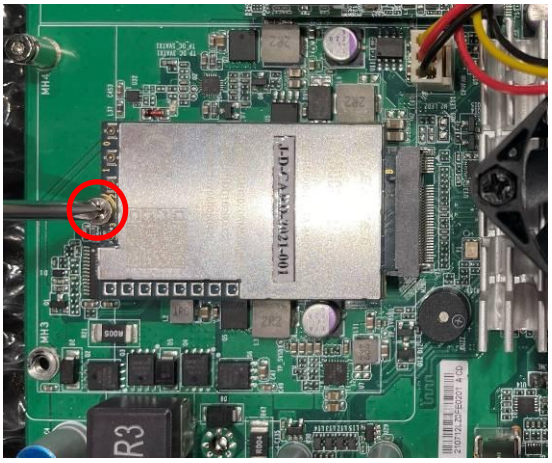
1. Locate M.2 B-key slot on the board.



2. Remove the screw nut in the marked spot **(MH2)** for further installation.

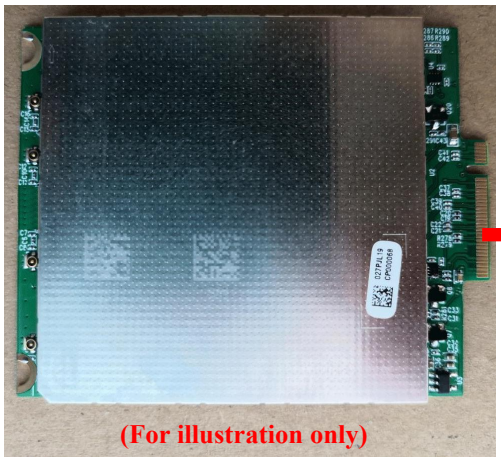


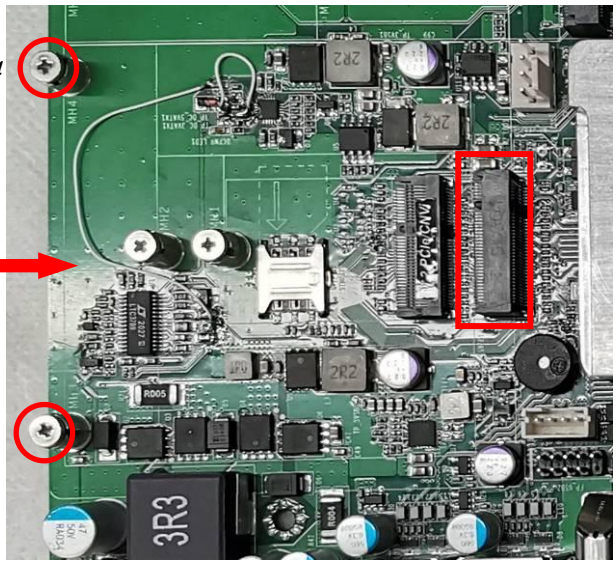
3. Insert the gold-figure side of the compatible M.2 B-key type-3052 card into the slot.



4. Secure the card to the board by tightening up the screw to the marked spot.

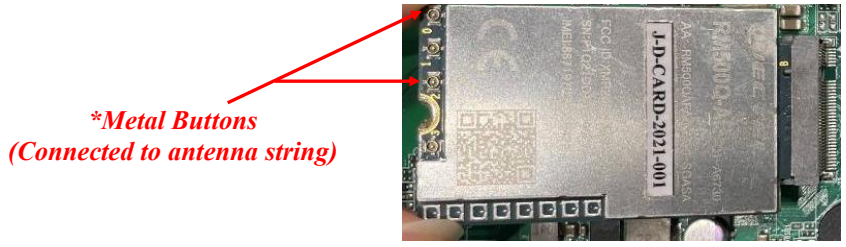
For type-6570 card installation:





Push compatible M.2 B-Key type-6570 card into M2B slot until the golden-figure side fully emerged into the slot, and then secure it by tightening the screws at locations **MH3 & MH4.**

***Note**: In the case that compatible M2B card comes with metal buttons to be connected with antenna strings, user needs to dissemble the whole heat sink on the back of the Panel PC and pick out the antenna string from hidden cable buddle **(please refer to 2-4-3)**. The installation steps for M2E card and M2B card are basically the same.*

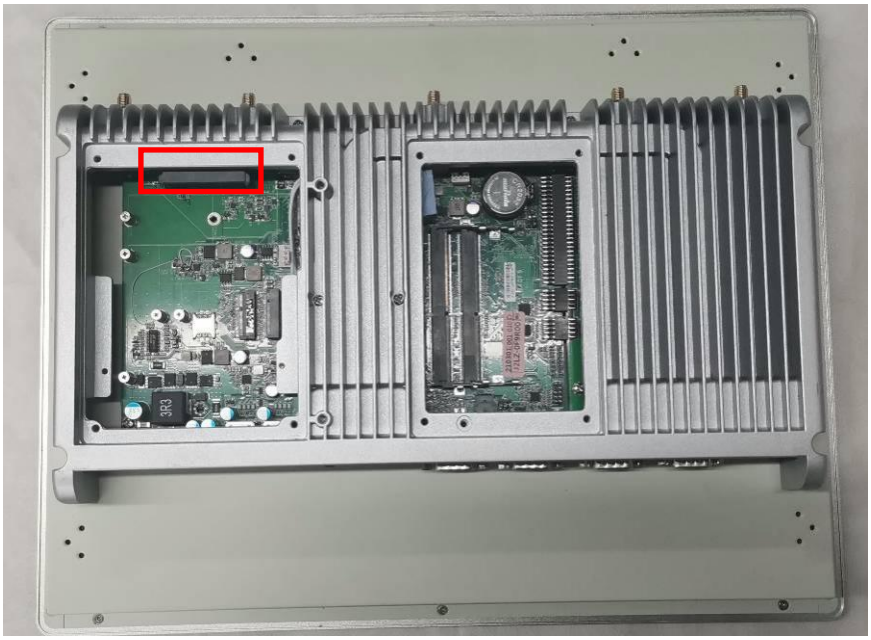


2-4-5 To Install HDD

The system is pre-installed with SATA cable and SATA power cable.

User can installed compatible 2.5'' HDD to the reserved HDD space. Please refer to the following instructions and illustration to install a 2.5" SATA HDD.

Before installation:



1. Locate the HDD connector onboard, and prepare compatible 2.5'' SATA hard disk.

2. Insert compatible HDD into HDD connector in the direction shown.

3. Install HDD cover back to the chassis after all necessary installation finished.

Chapter 3
Introducing BIOS

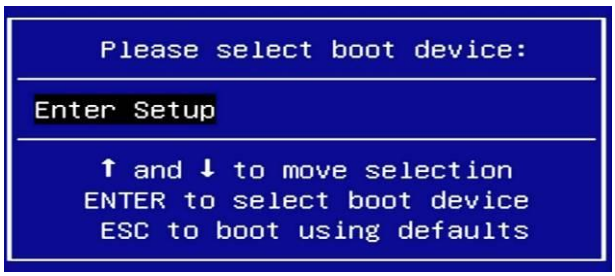
Notice!	The BIOS options in this manual are for reference only. Different configurations may lead to difference in BIOS screen and BIOS screens in manuals are usually the first BIOS version when the board is released and may be different from your purchased motherboard. Users are welcome to download the latest BIOS version form our official website.

The BIOS is a program located on a Flash Memory on the motherboard. This program is a bridge between motherboard and operating system. When you start the computer, the BIOS program will gain control. The BIOS first operates an auto-diagnostic test called POST (power on self test) for all the necessary hardware, it detects the entire hardware device and configures the parameters of the hardware synchronization. Only when these tasks are completed done it gives up control of the computer to operating system (OS). Since the BIOS is the only channel for hardware and software to communicate, it is the key factor for system stability, and in ensuring that your system performance as its best.

3-1 Entering Setup

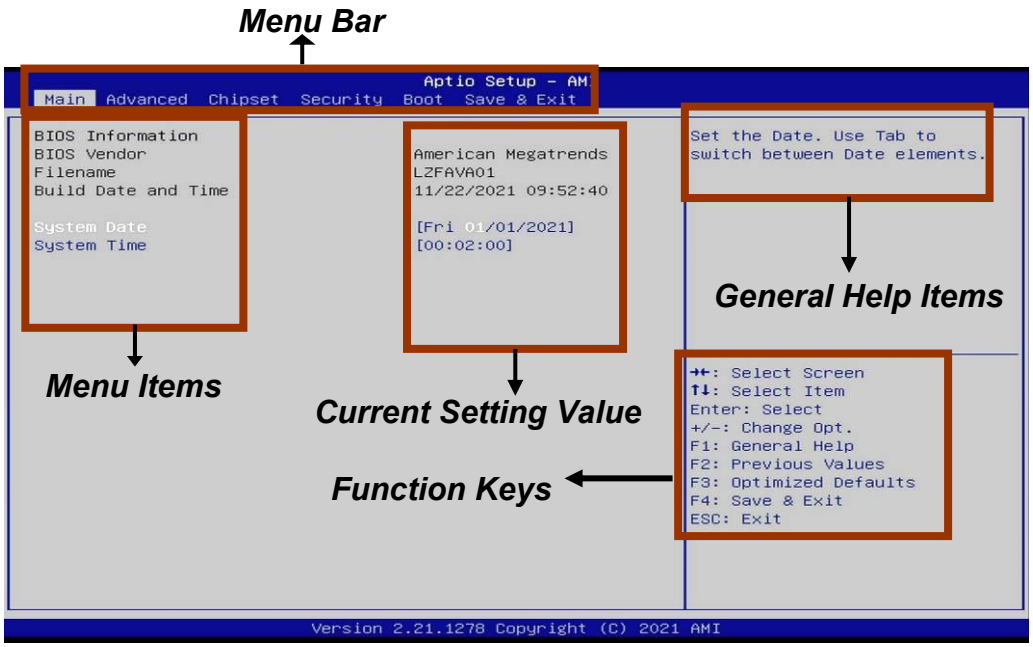
Power on the computer and by pressing <Del> immediately allows you to enter Setup. If the message disappears before your respond and you still wish to enter Setup, restart the system to try again by turning it OFF then ON or pressing the “RESET” button on the system case. You may also restart by simultaneously pressing <Ctrl>, <Alt> and <Delete> keys. If you do not press the keys at the correct time and the system does not boot, an error message will be displayed and you will again be asked to

Press **<Del>** to enter Setup; press < **F7**> to enter pop-up Boot menu.



3-2 BIOS Menu Screen

The following diagram show a general BIOS menu screen:



3-3 Function Keys

In the above BIOS Setup main menu of, you can see several options. We will explain these options step by step in the following pages of this chapter, but let us first see a short description of the function keys you may use here:

- Press←→ (left, right) to select screen;
- Press ↑↓ (up, down) to choose, in the main menu, the option you want to confirm or to modify.
- Press <Enter> to select.
- Press <+>/<–> keys when you want to modify the BIOS parameters for the active option.
- [F1]: General help.
- [F2]: Previous values.
- [F3]: Optimized defaults.
- [F4]: Save & Exit.
- Press <Esc> to exit from BIOS Setup.

3-4 Getting Help

Main Menu

The on-line description of the highlighted setup function is displayed at the top right corner the screen.

Status Page Setup Menu/Option Page Setup Menu

Press F1 to pop up a small help window that describes the appropriate keys to use and the possible selections for the highlighted item. To exit the Help Window, press **<Esc>**.

3-5 Menu Bars

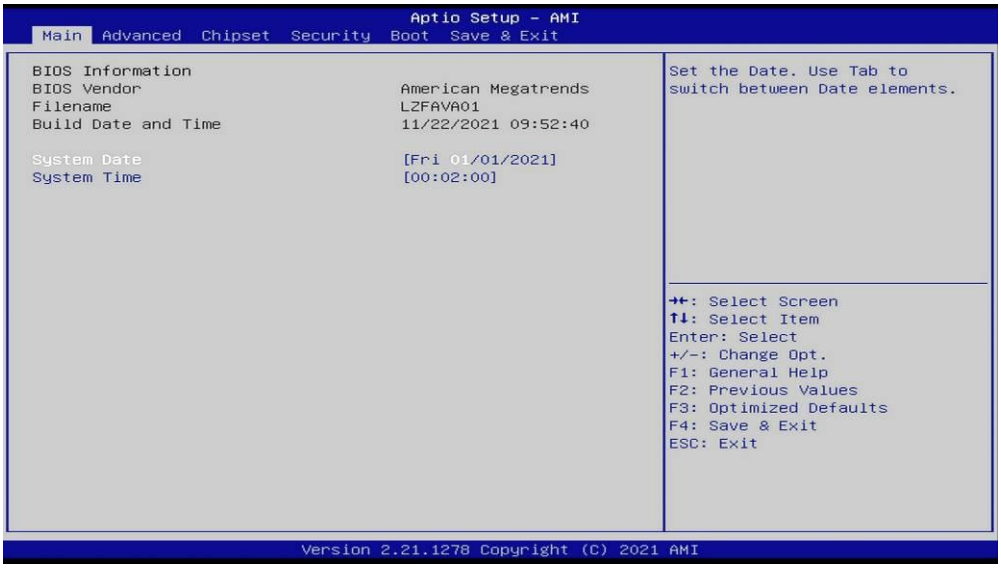
There are six menu bars on top of BIOS screen:

Main	To change system basic configuration
Advanced	To change system advanced configuration
Chipset	To change chipset configuration
Security	Password settings
Boot	To change boot settings
Save & Exit	Save setting, loading and exit options.

User can press the right or left arrow key on the keyboard to switch from menu bar. The selected one is highlighted.

3-6 Main Menu

Main menu screen includes some basic system information. Highlight the item and then use the <+> or <-> and numerical keyboard keys to select the value you want in each item.



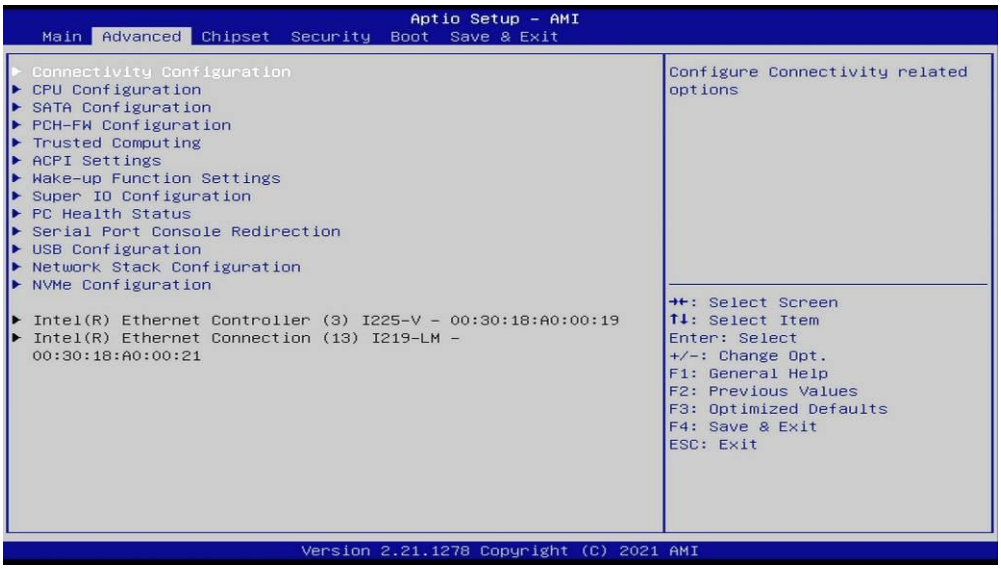
System Date

Set the date. Please use [Tab] to switch between data elements.

System Time

Set the time. Please use [Tab] to switch between time elements.

3-7 Advanced Menu



- **Connectivity Configuration**

  Use this item to configure Connectivity related options. Press [Enter] to make settings for the following sub-items:

  CNVi present

  CNVi Configuration

  CNVi Mode

  This option configures Connectivity.

  The optional settings: [Disabled Integrated]; [Auto Detection].

  [Auto Detection] means that if Discrete solution is discovered it will be enabled by default. Otherwise Integrated solution (CNVi) will be enabled;

  [Disabled Integrated] disables Integrated Solution.

- **CPU Configuration**

  Press [Enter] to make settings for the following sub-items:

  Intel (VMX) Virtualization

  The optional settings are: [Disabled]; [Enabled].

  When set as **[Enabled]**, a VMM can utilize the additional hardware capabilities provided by Vanderpool Technology.

  Intel(R) SpeedStep(tm)

  This item allows more than two frequency ranges to be supported.

  The optional settings are: [Disabled]; [Enabled].

  C states

  Use this item to enable or disable CPU Power Management. Allows CPU to go to C states when it's not 100% utilized.

  The optional settings are: [Disabled]; [Enabled].

  Hardware Prefetcher

  Use this item to turn on/off the MLC streamer prefetcher.

  The optional settings are: [Disabled]; [Enabled].

  Adjacent Cache Line Prefetch

  Use this item to turn on/off prefetching of adjacent cache lines.

  The optional settings are: [Disabled]; [Enabled].

- **SATA Configuration**

Press [Enter] to make settings for the following sub-items:
SATA Configuration
SATA
Port
Use this item to enable or disable SATA Port.
The optional settings: [Disabled]; [Enabled].
Hot Plug
Use this item to designate this port as Hot Pluggable.
The optional settings: [Disabled]; [Enabled].

- **PCH-FW Configuration**

Press [Enter] to view Management Engine Technology Parameters and make settings in the following sub-item:
ME Firmware Version
ME Firmware Mode
TPM Device Selection
Use this item to select TPM Device.
The optional settings: [dTPM]; [PTT].
[PTT]: Enable PTT in SkuMgr; **[dTPM]**: Disable PTT in SkuMgr.
Warning! *PTT/dTPM will be disabled and all data saved on it will be lost.*

- **Firmware Update Configuration**

Press [Enter] to make settings for '**Me FW Image Re-Flash**'.
Me FW Image Re-Flash
Use this item to enable or disable Me FW Image Re-Flash function.
The optional settings: [Disabled]; [Enabled].

** **Note**: In the case that user needs to update Me firmware, user should set **'Me FW Image Re-Flash'** as **[Enabled]**, save the settings and exit. The system will turn off and reboot after 4 seconds. If the user goes to BIOS screen again will find this item is set again as **[Disabled]**, but user can still re-flash to update firmware next time.*

- **Trusted Computing**

Press [Enter] to view current status information, or make further settings in the following sub-items:
Configuration
Security Device Support
Use this item to enable or disable BIOS support for security device. O.S. will not show Security Device. TCG EFI protocol and INT1A interface will not be available.
The optional settings: [Disabled]; [Enabled].

- **ACPI Settings**

Press [Enter] to make settings for the following sub-items:
ACPI Settings

ACPI Sleep State
Use this item to select the highest ACPI sleep state the system will enter when the SUSPEND button is pressed.
The optional settings: [Suspend Disabled]; [S3 (Suspend to RAM)].

- **Wake-up Function Settings**

Press [Enter] to make settings for the following sub-items:
Wake-up System With Fixed Time

Use this item to enable or disable System wake on alarm event.
The optional settings: [Disabled]; [Enabled].
When set as **[Enabled]**, the following items shall appear:

Wake-up Hour
Use this item to select 0-23. For example enter 3 for 3am and 15 for 3pm.

Wake-up Minute
Use this item to select 0-59.

Wake-up Second
Use this item to select 0-59.

Wake-up System with Dynamic Time
Use this item to enable or disable System wake on alarm event.
System will wake on the current time + Increase minute(s).
The optional settings: [Disabled]; [Enabled].
When set as **[Enabled]**, system will wake on the current time + increased minute(s).

PS2 KB/MS Wake-up
Use this item to enable or disable PS2 KB/MS Wake-up from (S3/S4/S5).
The optional settings: [Disabled]; [Enabled].
Note: This function is supported when 'ERP Support**' is set as [Disabled].*

USB S3/S4 Wake-up
Use this item to enable or disable USB S3/S4 wake-up.
The optional settings: [Disabled]; [Enabled].
Note: This function is supported when 'ERP Support**' is set as [Disabled].*

USB S5 Power
Use this item to enable or disable USB Power after System Shutdown.
The optional settings: [Disabled]; [Enabled].
Note: This function is supported when 'ERP Support**' is set as [Disabled].*

- **Super IO Configuration**

Press [Enter] to make settings for the following sub-items:
uper IO Configuration

ERP Support
Use this item to select Energy-Related Products function. This item should be set as [Disabled] if you wish to have all active wake-up functions.
The optional settings: [Disabled]; [Auto].

► **Serial Port 1 Configuration**
Press [Enter] to make settings for the following items:
Serial Port 1 Configuration

Serial Port
Use this item to enable or disable Serial Port (COM).
The optional settings: [Disabled]; [Enabled].
When set as **[Enabled]**, user can make further settings in the following items:
Device Settings

Change Settings
Use this item to select an optimal setting for Super IO Device.
The optional settings: [IO=3F8h; IRQ=4;]; [IO=3F8h; IRQ=3,4,5,7,10,11;]; [IO=2F8h; IRQ=3,4,5,7,10,11;]; [IO=3E8h; IRQ=3,4,5,7,10,11;]; [IO=2E8h; IRQ=3,4,5,7,10,11;].

Transmission Mode Select
The optional settings: [RS422]; [RS232]; [RS485].
Mode Speed Select
Use this item to select RS232/RS422/RS485 Speed.
The optional settings: [RS232/RS422/RS485=250Kbps]; [RS232=1Mbps, RS422/RS485=10Mbps].

► **Serial Port 2 Configuration**
Press [Enter] to make settings for the following items:
Serial Port 2 Configuration
Serial Port
Use this item to enable or disable Serial Port (COM).
The optional settings: [Disabled]; [Enabled].
When set as **[Enabled]**, user can make further settings in the following items:
Device Settings
Change Settings
Use this item to select an optimal setting for Super IO Device.
The optional settings: [IO=2F8h; IRQ=3;]; [IO=3F8h; IRQ=3,4,5,7,10,11;]; [IO=2F8h; IRQ=3,4,5,7,10,11;]; [IO=3E8h; IRQ=3,4,5,7,10,11;]; [IO=2E8h; IRQ=3,4,5,7,10,11;].
Transmission Mode Select
The optional settings: [RS422]; [RS232]; [RS485].
Mode Speed Select
Use this item to select RS232/RS422/RS485 Speed.
The optional settings: [RS232/RS422/RS485=250Kbps]; [RS232=1Mbps, RS422/RS485=10Mbps].

► **Serial Port 3 Configuration**
Press [Enter] to make settings for the following items:
Serial Port 3 Configuration

Serial Port
Use this item to enable or disable Serial Port (COM).
The optional settings: [Disabled]; [Enabled].
When set as **[Enabled]**, user can make further settings in the following items:
Device Settings
Change Settings
Use this item to select an optimal setting for Super IO Device.
The optional settings: [IO=3E8h; IRQ=10;]; [IO=3F8h; IRQ=3,4,5,7,10,11;]; [IO=2F8h; IRQ=3,4,5,7,10,11;]; [IO=3E8h; IRQ=3,4,5,7,10,11;]; [IO=2E8h; IRQ=3,4,5,7,10,11;]; [IO=3E0h; IRQ=3,4,5,7,10,11;]; [IO=2E0h; IRQ=3,4,5,7,10,11;].

► **Serial Port 4 Configuration**
Press [Enter] to make settings for the following items:
Serial Port 4 Configuration

Serial Port
Use this item to enable or disable Serial Port (COM).
The optional settings: [Disabled]; [Enabled].

When set as **[Enabled]**, user can make further settings in the following items:

Device Settings

Change Settings

Use this item to select an optimal setting for Super IO Device.
The optional settings: [IO=2F8h; IRQ=10;]; [IO=3F8h; IRQ=3,4,5,7,10,11;]; [IO=2F8h; IRQ=3,4,5,7,10,11;]; [IO=3E8h; IRQ=3,4,5,7,10,11;]; [IO=2E8h; IRQ=3,4,5,7,10,11;]; [IO=3E0h; IRQ=3,4,5,7,10,11;]; [IO=2E0h; IRQ=3,4,5,7,10,11;].

WatchDog Reset Timer

Use this item to enable or disable WDT reset function.
The optional settings: [Disabled]; [Enabled].
When set as **[Enabled]**, the following sub-items shall appear:

WatchDog Reset Timer Value

User can select a value in the range of [4] to [255] seconds when 'WatchDog Reset Timer Unit' set as [Sec]; or in the range of [4] to [255] minutes when 'WatchDog Reset Timer Unit' set as [Min].

WatchDog Reset Timer Unit

The optional settings: [Sec.]; [Min.].

Case Open Detect

Use this item to detect case has already open or not, show message in POST.
The optional settings: [Disabled]; [Enabled].
When set as [Enabled], system will detect if COPEN has been short or not (*refer to **CASE** jumper setting for Case Open Detection*); if Pin 1&2 of ***CASE*** are short, system will show Case Open Message during POST.

- **PC Health Status**

Press [Enter] to view current hardware health status, make further settings in '**SmartFAN Configuration**' and set value in '**Shutdown Temperature**'.

► **SmartFAN Configuration**

Press [Enter] to make settings for '**SmartFan Configuration**':

SmartFAN Configuration

CPUFAN Smart Mode

The optional settings: [Disabled]; [Enabled].
When set as **[Enabled]**, the following sub-items shall appear:

CPUFAN Full-Speed Temperature
Use this item to set CPUFAN full speed temperature. Fan will run at full speed when above this pre-set temperature.
CPUFAN Full-Speed Duty
Use this item to set CPUFAN full-speed duty. Fan will run at full speed when above this pre-set duty.
CPUFAN Idle-Speed Temperature
Use this item to set CPUFAN idle speed temperature. Fan will run at idle speed when below this pre-set temperature.
CPUFAN Idle-Speed Duty
Use this item to set CPUFAN idle speed duty. Fan will run at idle speed when below this pre-set duty.

- **Serial Port Console Redirection**

COM1
Console Redirection
Use this item to enable or disable COM1 Console Redirection.
The optional settings: [Disabled]; [Enabled].
When set as **[Enabled]**, user can make further settings in the following items:

- **Console Redirection Settings**

The settings specify how the host computer and the remote computer (which the user is using) will exchange data. Both computers should have the same or compatible settings.
Press [Enter] to make settings for the following sub-items.

COM1
Console Redirection Settings
Terminal Type
The optional settings: [VT100]; [VT100+]; [VT-UTF8]; [ANSI].
[ANSI]: Extended ASCII char set;
[VT100]: ASCII char set;
[VT100+]: Extends VT100 to support color, function keys, etc.;
[VT-UTF8]: Uses UTF8 encoding to map Unicode chars onto 1 or more bytes.

Bits per second
Use this item to select serial port transmission speed. The speed must be matched on the other side. Long or noisy lines may require lower speeds.
The optional settings: [9600]; [19200]; [38400]; [57600]; [115200].
Data Bits
The optional settings: [7]; [8].
Parity
A parity bit can be sent with the data bits to detect some transmission errors.
The optional settings: [None]; [Even]; [Odd]; [Mark]; [Space].
[Even]: parity bit is 0 if the num of 1's in the data bits is even;
[Odd]: parity bit is 0 if num of 1's in the data bits is odd;
[Mark]: parity bit is always 1;
[Space]: parity bit is always 0;
[Mark] and **[Space]**: parity do not allow for error detection.
Stop Bits
Stop bits indicate the end of a serial data packet. (A start bit indicates the beginning). The standard setting is 1 stop bit. Communication with slow devices may require more than 1 stop bit.
The optional settings: [1]; [2].
Flow Control
Flow control can prevent data loss from buffer overflow. When sending data, if the receiving buffers are full, a "stop" signal can be sent to stop the data flow. Once the buffers are empty, a "start" signal can be sent to re-start the flow. Hardware flow control uses two wires to send start/stop signals.
The optional settings: [None]; [Hardware RTS/CTS].
VT-UTF8 Combo Key Support
Use this item to enable VT-UTF8 Combination Key Support for ANSI/VT100 terminals.
The optional settings: [Disabled]; [Enabled].
Recorder Mode
With this mode enable only text will be sent. This is to capture Terminal data.
The optional settings: [Disabled]; [Enabled].

Resolution 100x31
Use this item to enable or disable extended terminal resolution.
The optional settings: [Disabled]; [Enabled].
Putty KeyPad
Use this item to select FunctionKey and KeyPad on Putty.
The optional settings: [VT100]; [LINUX]; [XTERMR6]; [SCO]; [ESCN]; [VT400].

Serial Port for Out-of-Band Management/
Windows Emergency Management Services (EMS)

Console Redirection EMS
Use this item to enable or disable Console Redirection.
The optional settings: [Disabled]; [Enabled].
When set as **[Enabled]**, the following sub-items shall appear:

- **Console Redirection Settings**

The settings specify how the host computer and the remote computer (which the user is using) will exchange data. Both computers should have the same or compatible settings.
Press [Enter] to make settings for the following items:

Out-of-Band Mgmt Port

Terminal Type EMS
The optional settings: [VT100]; [VT100+]; [VT-UTF8]; [ANSI].
[VT-UTF8] is the preferred terminal type for out-of-band management. The next best choice is [VT100+] and them [VT100]. See above, in Console Redirection Settings page, for more help with Terminal Type/Emulation.
Bits per second EMS
Use this item to select serial port transmission speed. The speed must be matched on the other side. Long or noisy lines may require lower speeds.
The optional settings: [9600]; [19200]; [57600]; [115200].
Flow Control EMS
Flow control can prevent data loss from buffer overflow. When sending data, if the receiving buffers are full, a “stop” signal can be sent to stop the data flow. Once the buffers are empty, a “start” signal can be sent to re-start the flow. Hardware flow control uses two wires to send start/stop signals.
The optional settings: [None]; [Hardware RTS/CTS]; [Software Xon/Xoff].

Data Bits EMS
The default setting is: [8].
**This item may or may not show up, depending on different configuration.*

Parity EMS
The default setting is: [None].
**This item may or may not show up, depending on different configuration.*

Stop Bits EMS
The default setting is: [1].
**This item may or may not show up, depending on different configuration.*

- **USB Configuration**

Press [Enter] to make settings for the following sub-items:

USB Configuration

XHCI Hand-off
This is a workaround for OSes without XHCI hand-off support. The XHCI

ownership change should be claimed by XHCI driver.
The optional settings: [Enabled]; [Disabled].

USB Mass Storage Driver Support

Use this item to enable or disable USB mass storage driver support.
The optional settings: [Disabled]; [Enabled].

USB hardware delays and time-outs:

USB transfer time-out

Use this item to set the time-out value for Control, Bulk, and Interrupt transfers.
The optional settings: [1 sec]; [5 sec]; [10 sec]; [20 sec].

Device reset time-out

Use this item to set USB mass storage device Start Unit command time-out.
The optional settings: [10 sec]; [20 sec]; [30 sec]; [40 sec].

Device power-up delay

Use this item to set maximum time the device will take before it properly reports itself to the host controller. 'Auto' uses default value: for a root port it is 100 ms, for a hub port the delay is taken from hub descriptor.
The optional settings: [Auto]; [Manual].
Select **[Manual]** you can set value for the following sub-item: '**Device power-up delay in seconds**', the delay range in from 1 to 40 seconds, in one second increments.

- **Network Stack Configuration**

  Press [Enter] to go to '**Network Stack**' screen to make further settings.

  Network Stack

  Use this item to enable or disable UEFI Network Stack.
  The optional settings: [Disabled]; [Enabled].
  When set as **[Enabled]**, the following sub-items shall appear:

  IPv4 PXE Support

  Use this item to enable IPv4 PXE boot support. When set as [Disabled], IPv4 boot support will not be available.
  The optional settings: [Disabled]; [Enabled].

  IPv6 PXE Support

  Use this item to enable IPv6 PXE boot support. When set as [Disabled], IPv6 boot support will not be available.
  The optional settings: [Disabled]; [Enabled].

  PXE boot wait time

  Use this item to set wait time to press [ESC] key to abort the PXE boot.
  Use either [+] / [-] or numeric keys to set the value.

  Media detect count

  Use this item to set number of times presence of media will be checked.
  Use either [+] / [-] or numeric keys to set the value.

- **NVMe Configuration**

  Press [Enter] to view current NVMe Configuration.
  **Note: options only when NVME device is available.*

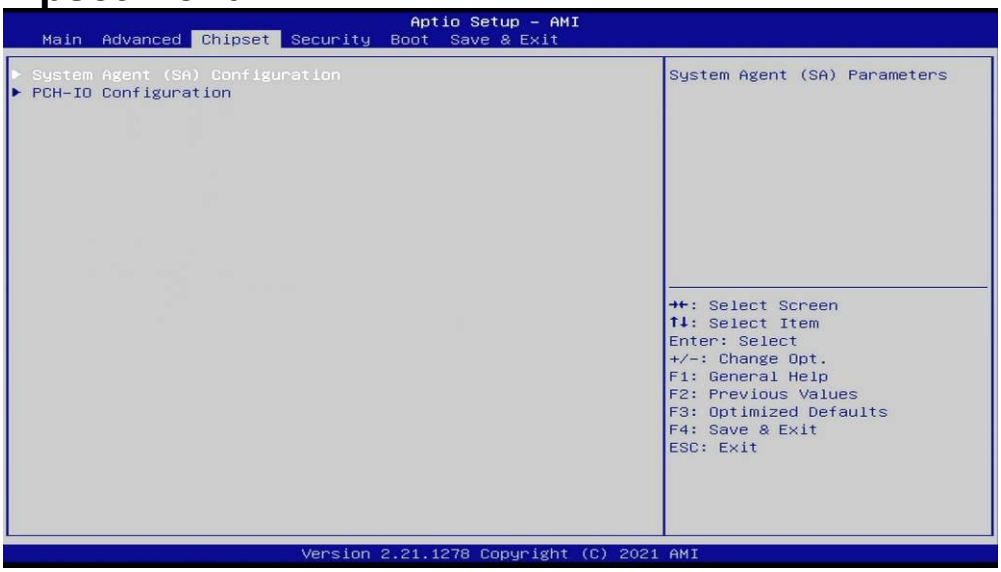
- **Intel(R) Ethernet Connection (3) I225-V - XX:XX:XX:XX:XX:XX**

  This item shows current network brief information.

- **Intel(R) Ethernet Connection (13) I219-LM - XX:XX:XX:XX:XX:XX**

  This item shows current network brief information.

3-8 Chipset Menu



- **System Agent (SA) Configuration**

Press [Enter] to make settings for the following sub-items:

System Agent (SA) Configuration

VT-d

► Memory Configuration

Press [Enter] to view brief information for the working memory module.

► Graphics Configuration

Press [Enter] to make further settings for Graphics Configuration.

Graphics Configuration

Active LVDS

Use this item to select the active configuration.

The optional settings are: [Disabled]; [Enabled].

When set as **[Enabled]**, the following sub-items shall appear:

Panel Type

Use this item to select panel type.

The optional settings are: [800x480; 18bit; Single]; [800x600; 18bit; Single]; [800x600; 24bit; Single]; [1024x600; 18bit; Single]; [1024x768; 18bit; Single]; [1024x768; 24bit; Single]; [1280x768; 24bit; Single]; [1280x800; 18bit; Single]; [1280x800; 24bit; Single]; [1366x768; 18bit; Single]; [1366x768; 24bit; Single]; [1440x900; 18bit; Dual]; [1440x900; 24bit; Dual]; [1280x1024; 24bit; Dual]; [1680x1050; 24bit; Dual]; [1920x1080; 24bit; Dual].

LVDS FW Write Protect

Use this item to support LVDS FW update/protect.

The optional settings are: [Disabled]; [Enabled].

Aperture Size

Use this item to select the Aperture Size.

The optional settings: [128M]; [256M]; [512M]; [1024M].

***Note:** Above 4GB MMIO BIOS assignment is automatically enabled when selecting 2048MB aperture. To use this feature, please disable CSM Support.*

DVMT Pre-Allocated

Use this item to select DVMT5.0 Pre-Allocated (Fixed) Graphics Memory size

used by the Internal Graphics Device.
The optional settings: [0M]; [32M]; [64M]; [96M]; [128M]; [160M].

DVMT Total Gfx Mem

Use this item to select DVMT5.0 Total Graphic Memory size used by the Internal Graphics Device.
The optional settings: [128M]; [256M]; [MAX].

► **PCH-IO Configuration**

Press [Enter] to make settings for the following sub-items:

PCH-IO Configuration

USB Controller

Use this item to enable or disable USB Physical Connector (physical port). Once **[Disabled]**, any USB devices plug into the connector will not be detected by BIOS or OS.
The optional settings: [Disabled]; [Enabled].

HD Audio

Use this item to control Detection of the HD-Audio device.
The optional settings: [Disabled]; [Enabled].
[**Disabled**]: HDA will be unconditionally disabled.
[**Enabled**]: HAD will be unconditionally enabled.

System State After Power Failure

Use this item to specify what state to go to when power is re-applied after a power failure (G3 state).
The optional settings: [Always On]; [Always Off]; [Former State].
Note: The option [Always On] and [Former State] are affected by 'ERP Support**' function. Please disable ERP to support [Always On] and [Former State] function.*

Onboard Lan1 Controller

Use this item to control the PCI Express Root Port.
The optional settings: [Disabled]; [Enabled].

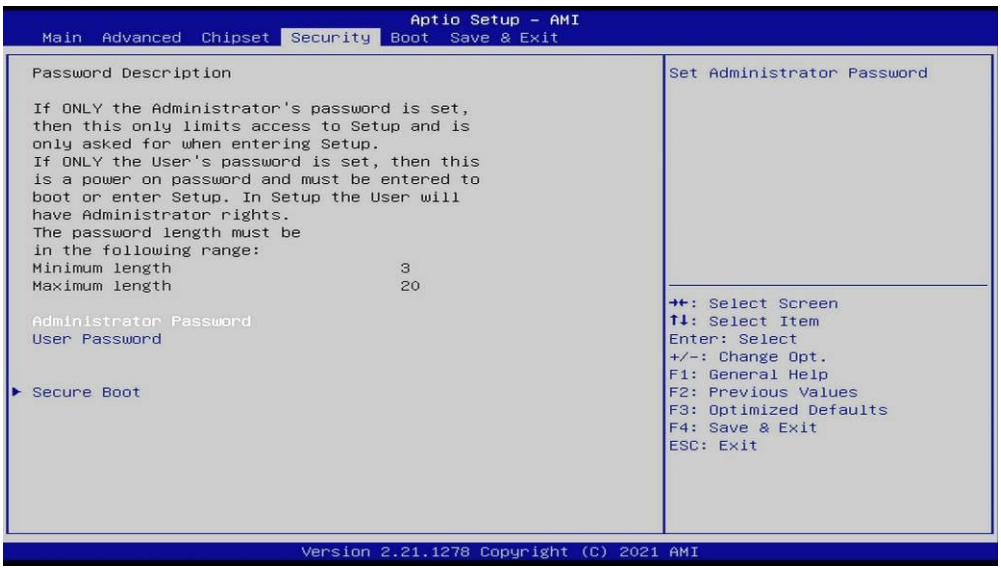
Onboard Lan2 Controller

Use this item to enable or disable onboard NIC.
The optional settings: [Enabled]; [Disabled].
When set as **[Enabled]**, the following sub-items shall appear:

Wake on LAN Enable

Use this item to enable or disable integrated LAN to wake the system.
The optional settings: [Enabled]; [Disabled].

3-9 Security Menu



Security menu allow users to change administrator password and user password settings.

Administrator Password

If there is no password present on system, please press [Enter] to create new administrator password. If password is present on system, please press [Enter] to verify old password then to clear/change password. Press again to confirm the new administrator password.

User Password

If there is no password present on system, please press [Enter] to create new administrator password. If password is present on system, please press [Enter] to verify old password then to clear/change password. Press again to confirm the new administrator password.

- **Secure Boot**

  Press [Enter] to make customized secure settings:

  System Mode

  Secure Boot

  Secure Boot feature is active if secure boot is enabled, Platform Key(PK) is enrolled and the system is in user mode. The mode change requires platform reset.

  The optional settings are: [Disabled]; [Enabled].

  Secure Boot Mode

  Use this item to Secure Boot mode to Standard mode or Custom mode. This change is effective after save. After reset, this mode will return to Standard mode. In Custom mode, Secure Boot Policy variables can be configured by a physically present user without full authentication.

  The optional settings: [Standard]; [Custom].

  When set as [**Custom**], user can make further settings in the following items that show up:

  Restore Factory Keys

  This item force system to user mode. Install factory default secure boot key databases.

Reset to Setup Mode

Key Management

Press [Enter] to make settings for the following sub-items:

Vendor Keys

Factory Key Provision

This item install factory default Secure Boot keys after the platform reset and while the system is in setup mode.

The optional settings are: [Disabled]; [Enabled].

Restore Factory Keys

This item force system to user mode. Install factory default secure boot key databases.

Reset To Setup Mode

Export Secure Boot Variables

Enroll Efi Image

This item allows the image to run in Secure Boot mode.

Enroll SHA256 Hash certificate of a PE image into Authorized Signature Database (db).

Device Guard Ready Remove 'UEFI CA' from DB

Restore DB default

This item restore DB variable to factory defaults.

Secure Boot variable/Size/Keys/Key Source

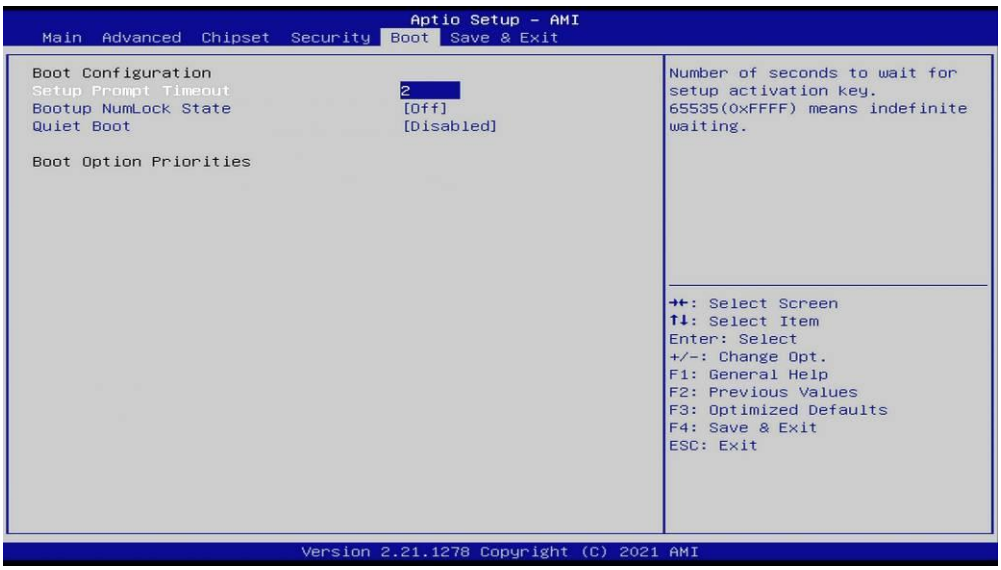
Platform Key(PK)/Key Exchange Keys/Authorized Signatures/Forbidden Signatures/ Authorized TimeStamps/OsRecovery Signatures

Use this item to enroll Factory Defaults or load certificates from a file:

1. Public Key Certificate:
   a) EFI_SIGNATURE_LIST
   b) EFI_ CERT_X509 (DER)
   c) EFI_ CERT_RSA2048 (bin)
   d) EFI_ CERT_SHAXXX
2. Authenticated UEFI Variable
3. EFI PE/COFF Image (SHA256)

Key Source: Factory, External, Mixed.

3-10 Boot Menu

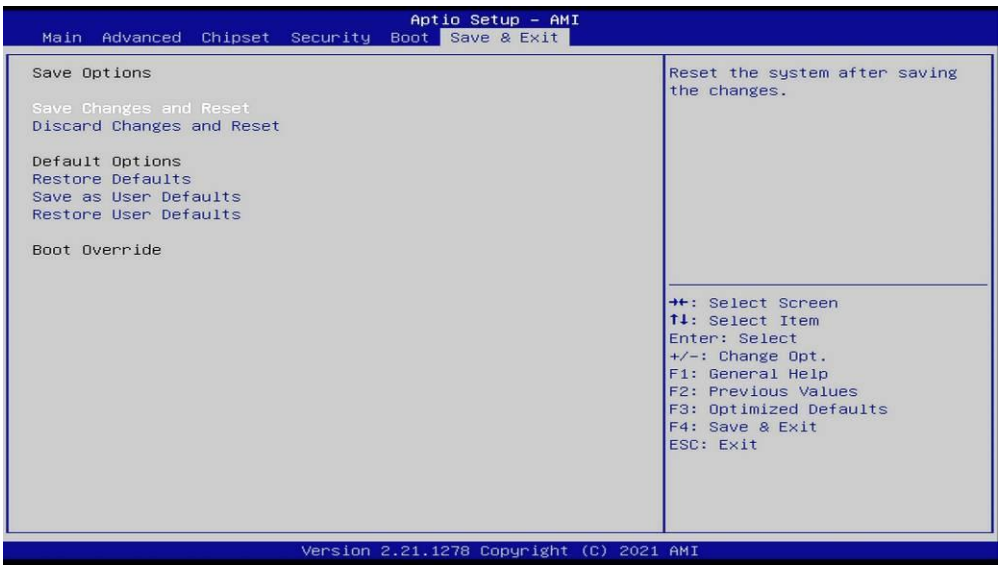


Boot Configuration

Setup Prompt Timeout
Use this item to set number of seconds to wait for setup activation key. 65535 (0xFFFF) means indefinite waiting.
Bootup NumLock State
Use this item to select keyboard NumLock state.
The optional settings: [On]; [Off].
Quiet Boot
Use this item to enable or disable Quite Boot option.
The optional settings: [Disabled]; [Enabled].

Boot Option Priorities

3-11 Save & Exit Menu



Save Options:
Save Changes and Reset
This item allows user to reset the system after saving the changes.
Discard Changes and Reset
This item allows user to reset the system without saving any changes.
Default Options:
Restore Defaults
Use this item to restore /load default values for all the setup options.
Save as User Defaults
Use this item to save the changes done so far as user defaults.
Restore User Defaults
Use this item to restore defaults to all the setup options.
Boot Override

Appendix

General Notices

European Union CE Marking and Compliance Notices

Products intended for sale within the European Union are marked with the Conformity European (CE) Making, which indicates compliance with the applicable Directive and European standards and amendments identified.

Shielded Cables Notice

All connections to other computing devices must be made using shielded cables to maintain compliance with FCC regulations.

Peripheral Devices Notice

Only peripherals (input/out devices, terminals, printers, etc) certified to comply with Class B limits may be attached to this equipment. Operation with non-certified peripherals is likely to result in interference to radio and TV reception.

Wireless Related Information

Wireless Interoperability

Wireless LAN PCI Express Mini Card is designed to be interoperable with any wireless LAN product that is based on Direct Sequence Spread Spectrum (DSSS), Complementary Code Keying (CKK), and/or Orthogonal Frequency Division Multiplexing (OFDM) radio technology, and is compliant to:

The IEEE802.11a/b/g/n Standard on Wireless LANs was defined and approved by the Institute of Electrical and Electronics Engineers.

The Wireless Fidelity (WiFi) certification as defined by the Wi-Fi Alliance.

Usage Environment and Your Health

Wireless LAN PCI Express Mini Card emits radio frequency electromagnetic energy like other radio devices. However, the level of energy emitted is far much less than the electromagnetic energy emitted by wireless devices like for example mobile phones.

Due to the fact that Wireless LAN PCI Express Mini Card operates within the guidelines found in radio frequency safety standards and recommendations, we believe the integrated wireless cards are safe for use by consumers. These standards and recommendations reflect the consensus of the scientific community and result from deliberations of panels and committees of scientists who continually review and interpret the extensive research literature.

In some situation or environment, the use of Wireless LAN PCI Express

Mini Card may be restricted by the proprietor of the building or responsible representatives of the organization. These situations may for example include:

Using the integrated wireless cards on board of airplanes, or in hospitals

In any other environment that the risk of interference to other devices and service are perceived or identified to be harmful.

If you are uncertain of the policy that applies on the use of wireless devices in a specific organization (e.g., airport or hospital), you are encouraged to ask for authorization to use Wireless LAN PCI Express Mini Card prior to turning on the computer.

Electronic Emissions Notices

European Union Compliance Statement Class B Compliance

European Union – Compliance to the Electromagnetic Compatibility Directive

This product is in conformity with the protection requirements of EU Council Directive 2004/108/EC on the approximation of the laws of the Member States relating to electromagnetic compatibility. We cannot accept responsibility for any failure to satisfy the protection requirements resulting from a non-recommended modification of the product, including the installation of option cards from other manufacturers.

This product has been tested and found to comply with the limits Class B Information Technology Equipment according to European Standard EN55022. The limits for Class B equipment were derived for typical residential environments to provide reasonable protection against interference with licensed communication devices.

Properly shielded and grounded cables and connectors must be used in order to reduce the potential for causing interference to radio and TV communications and to other electrical or electronic equipment.

FCC Rules and Regulations-Part 15

This devices uses, generates and radiates radio frequency energy. The radio frequency energy produced by this device is well below the maximum exposure allowed by the Federal Communications Commission (FCC)

- This device complies with the limits for the Class B digital device pursuant to Part 15 subject to the following two conditions:
- This device may not cause harmful interference.
- This device must accept any interference received, including interference that may cause undesired operation.

The FCC limits are designed to provide reasonable protection against harmful interference when the equipment is installed and used in accordance with the instruction manual and operated in a commercial environment. However, there is no guarantee that interference will not occur in a particular commercial installation, or if operated in a residential area.

If harmful interference with radio or television reception occurs when the device is turned on, the user must correct the situation at the user's own expense. The user is encouraged to try one or more of the following corrective measures:

- Re-orient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that on which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

CAUTION: The Part 15 radio device operates on a non-interference basis with other devices operating at this frequency. Any changes or modification to said product not expressly approved by Intel could void the user's authority to operate this device.